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BY SIR BERKELEY MOYNIHAN, BART., K.C.M.G., C.B., LL.D.,

PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A DIVERTICULUM is a wayside shelter by a main path. In the alimentary canal it is caused by a protrusion of the mucous membrane, with or without the other coats, from the lumen of the bowel. In the embryo the extrusion of the wall of the intestine is an integral step in the formation of several of the organs whose processes are associated with, and essential to, the work carried on in the digestive tract. The liver and the pancreas arise as buds from the intestinal wall. But not all the little pouches which spring from the mucosa have this full development. We may discover the following different destinies.

DESTINIES OF THE EMBRYONIC DIVERTICULUM.

1. The diverticulum may develop in fœtal life and proceed on its normal career and lead to the growth of—

(*a*) The appendix whose connexion, throughout its whole length is fully maintained, there being no differentiation into a duct.

(*b*) The liver and pancreas whose connexion is maintained with the alimentary canal through their ducts.

(*c*) The thyroid gland, whose connexion as a rule is completely broken in early fœtal life. The lumen of the protusion, from which this gland develops, does not go deep into the solid bud which consists of cells forming the thyreoglossal tract. The foramen cæcum on the dorsum of the tongue presents the upper and only patent part of this diverticulum; the pyramid of the thyroid gland is the remnant of the lower part of the tract. From the intervening portion of the tract, if obliteration is not complete, "dermoid" cysts may arise; they lie sometimes in the base of the tongue, sometimes below the hyoid bone whose development disintegrates the tract.

2. The diverticulum may develop normally in fœtal life, but its connexion with the mucosa in the adult may remain only in curtailed condition, or may finally disappear.

(*a*) The pouch of Rathke, seen in early infancy, vanishes as a rule completely in the course of a few years.

(*b*) The diverticulum of Meckel found towards the lower end of the ileum is the unclosed portion of the omphalomesenteric duct.

3. The diverticulum may develop, and in normal circumstances disappear in fœtal life. In a few instances this normal atrophy and disappearance may not take place, and a diverticulum is found in the adult. Lewis and Thyng,[30] and also Keibel and Mall,[31] have shown that diverticula from the stomach, duodenum, and jejunum are frequently found in fœtal life, and at their tip little solid masses of cells are seen, identical with the cells from which the pancreas grows. These cells normally wither and are absorbed. It would seem as though a whole series of efforts were made to develop the pancreas, only those connected with the ducts of Wirsung and Santorini surviving. The others are there in case of mischance. In a few such cases the normal disappearance does not occur and gastric, duodenal, or jejunal buds, with an accessory pancreas attached to each, may persist into adult life.

FORMS OF DIVERTICULUM.

Various forms of diverticulum occur and may be classified in this way:—

(*a*) A diverticulum which arises as a bud from the wall of the alimentary canal during development will contain all the coats of the bowel at that point. It is said to be "congenital" in origin and "true" in structure.

(*b*) A diverticulum which occurs after development is complete, and is due to some abnormal process, will be found to contain, as a rule, only the mucous coat, with or without an adventitious fibrous layer; in no case does it display all the coats of the alimentary canal. It is "acquired" in origin and "false" in structure.

(*c*) An acquired diverticulum may be caused either by the pushing out of the mucosa from the lumen owing to increased intestinal pressure, or by the dragging out of the wall by the adhesion of some firm structure to the outer side of the bowel. In the former case it is a "pulsion diverticulum," in the latter a "traction diverticulum" (Rokitansky [50]). A diverticulum, caused by the traction of an adherent structure to the outer side of the alimentary canal, as, for example, in the œsophagus, may enlarge because of the pressure of increasing quantities of retained substances within its cavity. Beginning as a "traction diverticulum," its enlargement is due to conditions similar to those which create and enlarge a "pulsion diverticulum." A third form of diverticulum, the "traction-pulsion" diverticulum, may therefore be described.

The following are the morbid changes which may occur in diverticula:—

1. Inflammation in and around the sac; diverticulitis and peridiverticulitis.
2. Suppuration.
3. Sloughing and gangrene.
4. Perforation { to the surface. / to a serous cavity, pleural or peritoneal. / to another viscus.
5. Adhesions which lead to the compression and withering of the sac, obsolescence; or, in the case of Meckel's diverticulum, adhesions leading in one or other way to intestinal obstruction.
6. Development of carcinoma.
7. Rotation of the sac when it has grown to such a size as to develop a "neck" or pedicle; this rotation, together with the pressure of the distended sac, causing obstruction.

Diverticula of the Pharynx.

There are three forms of pharyngeal diverticula. There is a high lateral form, which contains air and an accumulation of mucus; it is due to a lack of fusion between the branchial clefts, and the opening, as a rule very small, lies close to the tonsil. Defects in the closure of branchial gaps are by no means infrequent; I have had many cases in which fistulæ and cysts in the neck have existed since birth; sometimes they communicate with the pharynx, and their removal presents a nice occasion for the exhibition of care and patience. Cases are recorded by Birtwistle and Frazer.[6] Excess in activity in closure of the clefts is indicated by the development of little red pimples near the ear and on the neck. When the failure to close a cleft affects the mucous rather than the cutaneous side a "blind internal fistula" develops which, under pressure, forms at last a large cavity in which mucus is retained; it may be inflated by air. Food does not often enter, for in the act of deglutition the small orifice is closed. The first case was recorded by M. Watson,[62] of Manchester. The aerocele was found in the dissecting-room. It extended from the tendon of the digastric muscle to the interclavicular notch. The position of the opening into the pharynx, just behind the tonsil, between the lower jaw above and the stylo-hyoid ligament below, pointed to some failure in the closure of the first postmandibular visceral cleft. Kostanecki [34] has dealt fully with the subject of anomalies in connexion with the branchial clefts. Wheeler [64] recorded a very remarkable case in which a large aerocele was traced to its origin in the right sinus pyriformis. After removing it a pharyngeal diverticulum of the kind presently to be described was found, and that too was removed. Godlee and Bucknall [10] recorded a case of inflatable diverticulum extending from above the angle of the jaw to the clavicle. The narrow pedicle passed through the thyrohyoid membrane. They review nearly 200 cases of pharyngeal pouches and fistulæ. The exact nature of their own case has been questioned by Irwin Moore.[42]

A *second form of diverticulum* (often spoken of erroneously as "œsophageal") springs from the back of the pharynx, in the middle line, as a rule, but sometimes at the side, extends almost invariably to the left side (only in rare examples to the right

side), and may form a large sac which, when distended, produces a prominent swelling in the neck, or extends even into the thorax.

The first mention of this condition in surgical literature is found in the form of a letter from Mr. Ludlow,[38] surgeon at Bristol, to Dr. William Hunter. The case was observed in the year 1764 and is described as one of "preternatural dilatation of, and bag formed in, the pharynx." The illustrations are excellent, and the accuracy of the description both of symptoms and of morbid anatomy is most remarkable. The specimen is in the Hunterian Museum at Glasgow, and a drawing of it recently made for me shows how accurate were the original pictures. In 1811 Monro,[41] of Edinburgh, described these pouches and discussed the method of their formation. Sir Charles Bell [4] described a "preternatural bag formed by the membrane of the pharynx which impeded the introduction of a bougie," and gave a good illustration. He was the first to suggest the origin of these protrusions in a spasmodic stricture of the muscle at the lower part of the pharynx, which caused fasciculation of the muscular layer above the obstruction, and hernial protrusion of the mucosa. He commented upon the analogy with the sacculation of the bladder in urethral obstructions. Matthew Baillie [2] relates a good example of this condition. Mondière [40] is often quoted as recording an example of it. Reference to his article, however, shows that it describes a case of perforation of the "lower part of the œsophagus" by a foreign body, a piece of granite, the size of a small apple, weighing 2 oz., which the patient "amused himself with, by rolling it in his mouth some moments before going to sleep." The condition is not very infrequent, but is no doubt often overlooked. Zenker [45] says that it is "so rare that few physicians have ever seen a case." There are now few hospital surgeons without some experience of it.

An interesting matter concerns the point of origin from the pharynx. It was commonly asserted, as first by Zenker, that the origin is "at the boundary between the pharynx and the œsophagus" where the musculature was weak. This area has since been described as the "Lannier-Hackermann" area by many writers, including the very last. The search for "Lannier" results in the discovery that he is Laimer,[35] a former prosector in Graz, and "Hackermann" is Karl Haeckermann,[22] now of Bremen, whose thesis appeared in 1891. The "Laimer" area is triangular and lies below the inferior constrictor, on the posterior wall at the very origin of the œsophagus. It is true that the wall of the gullet here is weak, but it is certainly not here that the pouch originates. Waggett and Davis [60] have shown that this area, whose muscular wall is not so thick as in the rest of the œsophagus, does not yield when a stream of water is forced under pressure into the pharynx and œsophagus. "When the dissected œsophagus was subjected to water pressure by attaching one end to the tap and securing the other there was a uniform dilatation of the œsophagus below and above the circular and sphincter portion of the inferior constrictor. The circular fibres of the constrictor appeared as a waist belt, and no weakness could be demonstrated on the wall of the œsophagus immediately below the inferior constrictor."

When a specimen is examined in the post-mortem room, and the finger passed down from the pharynx into the œsophagus a very decided difficulty is experienced in overcoming the resistance of the sphincter guarding the entrance to the gullet. This ring of muscle, of great strength, is formed by the crico-pharyngeus. It is the obstruction offered by this sphincter which causes the pharyngeal wall to yield to pressure, and the protrusion of the mucosa begins immediately at its upper border, where a considerable deposit of fat between the muscular fibres is often seen. The neck of the pouch therefore lies between the middle oblique fibres, and those lower circular fibres of the inferior constrictor which are now called the crico-pharyngeus. A few oblique fibres may lie below the opening of the pouch.

The origin of the third form—the lateral diverticulum—is, I think, quite different. A lateral diverticulum is not a median diverticulum gone astray. If the pharynx is dissected from behind a rather large pad of fat is found at the upper part of the œsophagus on each side immediately below the border of the crico-pharyngeus muscle. If this pad is gently teased away a gap will be revealed between the lowermost fibres of the crico-pharyngeus and those fibres of the œsophagus which are descending from their origin at the back of the cricoid cartilage. Advantage is taken of this hiatus to permit the passage of the recurrent laryngeal nerve with a branch of the inferior thyroid artery and vein, and a bundle of lymphatic vessels. Here, indeed, is the weakest spot in the muscular armature of the pharynx or œsophagus, and, therefore, it is here that one would expect to find a pouch developing. Though I have never had the opportunity of dissecting a specimen of lateral diverticulum there can be little doubt from the appearance shown in the drawings and descriptions of the only two whose records (Butlin [8] and Chevalier Jackson [30]) I can discover that this is their point of origin. Butlin illustrates a case of lateral diverticulum; the specimen is now in the museum at St. Thomas's Hospital. Mr. Urquhart, the curator, writes to me (March 8th, 1927):

"The opening of the pouch, I should say, had primarily been situated below the constrictor muscle, but as time passed the upper edge appears to have atrophied the lower fibres of the muscle to a small extent. The opening into the pouch is some half-inch in diameter."

In some accounts, of which Bilton Pollard's [46] may be quoted as an exemplary instance, the pouch is said to spring from the œsophagus "below the inferior constrictor muscle"; yet a careful reading makes it certain that the sphincter formed by the crico-pharyngeus was below the opening of the pouch.

"On passing the forefinger into the œsophagus a resistance was encountered at its commencement. There was no stricture in the ordinary sense and the mucous membrane appeared quite normal. But nevertheless the commencement of the œsophagus was firm, not dilatable, and would only admit the first phalanx of the fore-finger. Immediately above the resistant ring at the upper end of the œsophagus was the weak point in the middle line behind, at which the pouch had been developed."

There are therefore two forms of diverticulum in this region, a posterior median one passing through the interval between the oblique and the transverse fibres of the inferior constrictor (the fibres now described as the crico-pharyngeus muscle) as first shown by Killian [33]; and a lateral one passing through the weak spot, through which the recurrent laryngeal nerve enters. They are both pressure pouches. It is exceedingly probable that in coördination between the inferior constrictor fibres engaged in the propulsion of the bolus of food and the circular fibres which should relax to allow of the entrance of the bolus into the gullet, is responsible for the origin of the upper diverticulum: but what causes this incoördination? In a few cases a definite obstruction is found, due either to a spasm affecting the crico-pharyngeus, or to an organic stenosis lower down in the œsophagus. Rarely this obstruction is malignant. It is important to remember the possibility of stricture in the gullet when treatment is to be adopted.

In one of Chevalier Jackson's [30] cases two diverticula were present. Both were removed separately by operation: one recurred and was again removed. In the median form the lower lip of the opening (Killian's lip) is full, thick, and pouts into the pharynx in such manner that a bougie entering from the mouth is, like the food, easily deflected into the pouch. The pouch as it enlarges extends to the left, and downwards even into the chest, into which perforation has occurred. Robinson [49] records a case in which the pouch extended laterally and upwards "to the base of the skull." On distension it made the neck resemble that "of a pouter pigeon." The symptoms produced are characteristic. Dysphagia is intermittent and progressive. Regurgitation of unaltered food at once, or after many hours, or even days, is soon

observed. Pressure upon the neck, or a backward movement of the head brings food back into the pharynx, even after it has been swallowed. A swelling is noticed on the left side, filling as the meal is taken, and sometimes growing so large as to resemble a thyroid tumour. Gas developing in the pouch escapes into the pharynx, and has produced in patients of my own a condition, which I have not seen described, but which is perfectly characteristic, indeed pathognomonic. As the patient talks, the movements in the neck cause an expulsion of gas from the pouch, and the words spoken have "bubbles" in the middle of them, or among them; there is a curious, but quite unmistakable, spluttering of air in and among the spoken words. This phenomenon may be produced in a very striking manner if the patient is asked to read continuously while a gentle pressure is exercised upon the neck. Dysphagia may sometimes be severe, and dyspnœa, cyanosis, and coughing are caused by inhalation of particles of food suddenly expelled from the pouch into the pharynx. Enlargement of the pouch may cause displacement of the œsophagus and may exercise such pressure upon it that food cannot be taken in quantities adequate to sustain life. Death may occur from starvation, or from inhalation pneumonia.

Treatment.—If the nature of the condition is explained to an intelligent patient he can often be made to control the condition quite satisfactorily. He must empty the pouch after each meal, and wash it out with fluid drunk freely at the end of the meal, and preferably after the solid food has all been pressed back into the pharynx. If the sac is already large it is best to remove it. This was first accomplished by von Bergmann [8] in 1890, and in England by Butlin.[9] Formidable difficulties and dangers, chiefly derived from infection of the wound, are said to attend this method. Before operation a day or two must be given to the toilet of the pouch to clean it. After the sac has been cleared from its firm adhesions the whole wound is smeared with warm melted vaseline which is given time to "set," so as to seal off the connective tissue spaces. The same method of closure of the stump of the excised pouch is used as is found so satisfactory in the case of the duodenum after gastrectomy. With these little precautions and careful methods no anxiety need be felt. In all cases it must be made quite certain that any œsophageal obstruction, or any spasm of the crico-pharyngeus, is overcome. The division of the operation into two stages, the pleating of the unopened sac, or its suspension from the highest part of the wound so as to invert it and make the entrance the lowest instead of the highest part, are not methods which I have felt either need or desire to practise. Nor have I practised the method [30] in which the œsophagoscope is used to clean out the exposed sac and to facilitate its exposure and removal. It is wise to feed the patient for many days after operation by a Jutte tube passed through the nose. If the patient's strength is greatly depleted he may be fed in this manner for two or three weeks before operation, and the other means of resuscitation with which we all are familiar be practised. Gastrostomy has been performed in several cases; the use of the Jutte tube makes this unnecessary.

Diverticula of the Œsophagus.

These pouches are found chiefly in two places—at or near the bifurcation of the trachea, and at the lower end of œsophagus, within one or two inches of the diaphragm. When they occur in the former position they very rarely have any clinical importance; they may perhaps be a cause of mediastinitis as Rokitansky [50] supposed, and they may at times cause slight intermittent dysphagia. They are produced (*a*) by the traction of adherent bands springing from tuberculous and often calcified glands, and because of their position are known as "epibronchial" diverticula. These bands, "Ribberts [47] bands," often very firm and strong, are attached at the one end to the anterior wall of the gullet, at the other to a gland which is often adherent to the trachea or the left bronchus. Movements of deglutition and of respiration cause traction, hour by hour and day by day, until a little pouch is formed, which, perhaps by lodgment of food, but chiefly by continued traction, is steadily enlarged. As Waggott [61] first showed, the fundus of the pouch is, in many cases, drawn to a higher level than the orifice, so that food is not able to lodge in the cavity (see also Riebold [48]). They may also be caused (*b*) by the protrusion of the œsophageal wall above "Lütgert's ledge." [39] This is a ledge found on endoscopic examination of the gullet; it lies near the tracheal division, and is often assumed to be due to the pressure of the left bronchus. The ledge, however, does not lie quite in the position of this bronchus, nor is its direction the same; and the bronchus does not normally come into a relation with the œsophagus intimate enough to indent it. The ledge, however caused, may have the effect of causing a temporary halt in the descent of large particles of food. A little bulging of the wall, so caused, may by degrees increase until a little pit, and, finally, a fossa, is formed. If this explanation is sound the diverticulum is of the "pressure" variety. In this situation the pouches rarely attract notice, they are sometimes seen on radiological examination but I have no experience of treating them.

"Epiphrenic" diverticula, arising within a short distance of the diaphragm, and enlarging to a size which makes their recognition a simple matter for the radiologist, are attracting increasing attention. I have seen three cases of this kind. In one occurring in a woman the pouch was large, on the left side, shown clearly in the X ray photograph, and was associated with a high degree of cardiospasm. This has been noted in cases recorded by Hurst [28] and by Vinson.[59] I found it necessary to do what is so rarely necessary, to dilate the cardia after gastrostomy. My fingers passed easily into the diverticulum, which was as large as a lawn tennis ball. My other two cases occurred in men and were unsuspected until X ray examination revealed the condition. In both cases the use of Hurst's tube relieved the symptoms of "dyspepsia" which had been attributed to a gastric ulcer. When the diverticula are large and causing symptoms an operation may be necessary. Clairmont [14] has excised such a diverticulum and has kindly given me photographs of the case before and after operation. The result was excellent. In other cases operations have been practised for the anastomosis of the pouch with the fundus of the stomach, as first suggested by Lotheissen.[37] Gosset[20] described and illustrated a new operation of lateral œsophago-gastrostomy. The occasional presence of a stricture lower down in the œsophagus, possibly even of malignant disease, must be remembered.

Diverticula of the Stomach.

They are very rare and are found in two places, near the œsophageal opening and near the pylorus. There is, I think, little doubt that two forms occur, the true and the false—the true being congenital, the false associated with penetrating gastric ulcer.

The earliest recorded case is that of Weichselbaum.[68] The diverticulum was near the pylorus, and at its tip was a nodule the size of a hempseed, having the structure of the pancreas (see earlier reference to Lewis and Thyng).[36] There was also an accessory pancreas the size of a bean on the anterior duodenal wall. Horrocks and Falconer [26] recorded the case of a man of 54, who died after a self-inflicted gunshot wound. There was a marked constriction in the middle of the greater curvature, said by Cunningham to be spasmodic. A diverticulum arose from the pyloric canal on the greater curvature. There was also a pouch in the duodenum just beyond the pylorus. The floor of the gastric pouch was formed by an accessory pancreas. Keith [32] has dealt with this subject also.

The diverticula arising in the proximal part of the stomach are always in close relation to the œsophageal opening. Keith points out that the stomach in the immediate neighbourhood of this opening is weak,

and will yield readily under pressure. The continuous vomiting of pregnancy as suggested by Hurst [29] may, in some cases, be responsible for the protrusion of the mucosa in consequence of the great and repeated sudden increase of pressure. In the pig a large diverticulum is normally found near the cardiac orifice. It is the analogue of the fundus of the stomach in man.

Åkerlund [1] has recently drawn attention to the subject by the record of four cases diagnosed, radioscopically, during life. All the patients were women, all had symptoms suggestive of gastric ulceration, in all the pouch was near the cardiac orifice, had a rounded, smooth surface, and retained an opaque meal for a few hours. My friend, Dr. Thomson, of Wakefield, has had a similar case, and has kindly given me the radiographs of it. I have twice found during operations for duodenal ulcer a pouch on the greater curvature of the stomach about the size of a walnut; the exterior was smooth and free from adhesion, the finger readily entered the cavity, and in the floor of each an island of pancreatic tissue was present. In one patient upon whom I performed gastrectomy for a tumour causing a pouch on the greater curvature of the stomach a smooth cavity was found, at the fundus of which was an adenomyoma.[56] False diverticula associated with ulcer are, of course, very frequent and are well known. They are the "accessory pockets" formed when an ulcer penetrates deeply into the pancreas or into the liver, or into a mass of adhesions formed from the omenta.

Possibly true diverticula are more common than we suppose. Radiologically they must be difficult to distinguish from the false variety. Hurst believes that—

> "The remarkable position, even outline, uniform rounded shape, free mobility, both with the stomach and to a slight extent independently of it, and the absence of tenderness make the diagnosis of a diverticulum of the stomach easy when the existence of such a condition is recognised, though in the absence of such recognition a diagnosis of ulcer would appear to be inevitable in spite of the very unusual features observed with the X rays."

Treatment.—When a diverticulum lying near the cardia is large and causes symptoms it may be treated in the manner suggested by Hurst. Large draughts of water fill the diverticulum, which may then be emptied by placing the patient in such a position that the orifice is the lowest part. The pouch is washed out daily, or oftener. If a pouch in the neighbourhood of the pylorus proves troublesome it may be treated by gastrectomy.

Diverticula of the Duodenum.

A case described in the year 1710 by Chomel [13] is often quoted as the first in which a duodenal diverticulum was observed. The pouch contained 22 yellowish-white stones, and was probably an abscess in the head of the pancreas which had ruptured into the bowel. In Alexander's translation of Morgagni's [43] letters there is a description of a case on which also doubts have been cast, which I do not share. The first indisputable description was given in 1815 by Fleischman [17]; in this country Habershon [22] was the earliest observer. Very little clinical interest was taken in the condition until Case [10] first demonstrated a series of cases at a meeting of the American Medical Association in 1913, and in a later paper carried his discoveries further. E. I. Spriggs [54] in this country, in a series of papers, also called attention to their significance. As a result of radiological examinations we know now that the condition is not very uncommon, though more often overlooked than recognised. Case,[11] in a consecutive series of 6847 examinations after a barium meal, found duodenal diverticula in 85 cases (1·2 per cent.), and colonic diverticula in 138 cases (2 per cent.). In 78 duodenal cases the pouch was solitary. Even on the operation table, when we know from the X ray appearances that a pouch is present, it is not always a simple matter to recognise it at once. I owe the knowledge I possess of this condition chiefly to Spriggs. He has shown [55] that in 1000 consecutive examinations of the alimentary canal by X ray, 38 patients had 51 diverticula of the duodenum, situated as follows: in the first part 1, in the second part 30, in the third part 16, in the terminal part 4; 20 patients were men, 18 women. Case found in his series that the diverticulum was in the first part of the duodenum in 17 cases, in the second part in 49 cases, in the third and fourth parts in 19 cases. He says that—

> "In about half the cases we may expect the diverticula to arise from the second portion of the duodenum, with the fundus of the sac lying within the substance of the pancreas or dorsal to it."

The condition may be congenital or acquired. The majority of the pouches are on the inner side of the second part of the duodenum, in the concavity which embraces the head of the pancreas. The pouches often burrow into the gland, and they are generally free from any sign of inflammation. At the fundus, as with the gastric diverticula, masses of pancreatic tissue may be discovered.

Ulceration of the parts of the duodenum, from which the pouches commonly spring, is exceedingly rare. The passage of the common duct obliquely through the duodenal wall is held to weaken it, and so to make easier the protrusion of the mucosa through this part. The inspection of the pouches in the second part of the duodenum, during life and in the post-mortem specimens, makes me feel extremely doubtful as to their congenital origin; it is apparently certain that this condition is rare in youth and comparatively common in aged people. Simmonds [52] has found diverticula in the first part of the duodenum in early childhood and concludes that these at least are congenital. I have seen only one case of this kind on the operation table; the walls of the pouch seemed to contain all the coats; the mouth was wide, there was no trace of inflammation, there was a fibrous mass at the fundus which I supposed was an aberrant pancreas. The case was one of cholelithiasis, and the pouch had no connexion with the symptoms. Huddy,[23] in an excellent discussion, decides in favour of the acquired origin of most examples. The "pouching" of the first part of the duodenum associated with ulceration, and first described by Perry and Shaw,[45] is, of course, a very common condition, and has no affinity with the diverticula now considered. There are probably both congenital and acquired diverticula, the congenital being associated with an accessory pancreas involving the first portion of the gut, the acquired involving the second part chiefly, and being perhaps induced by muscular deficiency near the ampulla. The symptoms of duodenal diverticula are generally ascribed to a different cause. I have operated upon several patients in whom this condition, previously diagnosed or quite unsuspected, has been found.

Cholecystitis and duodenal ulcer are likely to be diagnosed when a diverticulum is the cause of the symptoms. Now that we are becoming increasingly aware of the disease, and when almost every case is examined radiologically, mistakes will be less frequent. The diagnosis cannot, I think, be made from the clinical history, but only on radiological examination. It is by no means always necessary or even possible to treat the cases surgically. A change of position will often allow a pouch to empty; paraffin will keep it lubricated and help to restrain putrefaction; and a large dose of bismuth carbonate taken once or twice weekly and allowed to remain in the pouches will probably help to keep infection away. In 18 cases treated by Spriggs [55] 13 were completely relieved by medical treatment. I have once excised a pouch about one and a half inches long and half inch in diameter from the outer side of the second part of the duodenum; and I had once pleated one into the duodenal wall. Stiles has related to Spriggs a case in which he removed a pouch the size of a hen's egg, which sprang from the concavity of the duodenum and contained masses of pancreatic tissue

in its wall. Gastro-enterostomy when the pouch is large, adherent, and infected may be advisable, for in such circumstances duodenal obstruction may be severe.[51] Surgical treatment is needed, however, only in very rare conditions, for the orifice of the pouch is, as a rule, large enough to allow of the easy escape of contents when an appropriate position is taken. Removal of the diverticulum from the inner or posterior aspect of the second part of the duodenum may present the most formidable difficulties. Case [11] records an example of duodenal diverticulitis with complication of the common bile-duct in which cholecystotomy gave relief.

Diverticula of the Jejunum and Ileum.

Diverticula of the small intestine of both jejunum and ileum are occasionally seen. Meckel's diverticulum is a well-known anomaly, and its surgical possibilities are quite understood. Jejunal diverticula may, though rarely, cause distress. The best example I have ever seen occurred in the practice of my colleague, Mr. Braithwaite. Enterectomy was necessary, and the very beautiful specimen is now in the Museum of the Royal College of Surgeons. The diagnosis was made after a radiological examination by Dr. L. A. Rowden. The first diagnosis ever recorded stands to the credit of Dr. Case. Gordinier and Sampson [19] record an example of multiple diverticula of the jejunum; 13 pouches were found in a length of 40 cm. All the pouches were on the mesenteric border. One of them had become inflamed, causing partial occlusion of the lumen of the bowel. Hansemann [34] reported one case in which over 400 diverticula were found, the majority were in the jejunum; and another case in which a diverticulum from the upper part of the jejunum contained pancreatic tissue at the fundus. Boker,[7] in an inaugural dissertation, reported a remarkable instance of multiple diverticula; there were two in the duodenum, many in the small intestine, many in the colon, and one in the urinary bladder. One of the jejunal diverticula had ulcerated and undergone subacute perforation. A case occurring in an infant 5 weeks old is recorded by Cautley [12]; a cyst which was formed by the pouch had two openings into the intestine; it was larger than the stomach and had caused obstruction. Scot Skirving [53] has carefully discussed this condition, which is not, I believe, nearly so infrequent as we suppose, though it rarely causes symptoms. The pouches may be numerous, are rarely larger than a walnut, are usually on the mesenteric side, and because of their large orifice do not, as a rule, retain food for long periods, and do not, therefore, often lead to serious complications.

Diverticula of the Large Intestine.

This condition is a common one. At first recognised by the pathologists, it was hardly considered by the clinicians until the increasing frequency of abdominal operations and the aptitude of radiologists revealed the truth.

The earliest description, perfect and almost complete in its accuracy, was given by Cruveilhier.[16] In recent years attention was attracted to the subject by Graser,[21] by Beer,[3] and especially by Maxwell Telling,[57] and with Gruner.[58] The first case recognised and recorded in this country occurred in a patient referred to me by Dr. Helm,[25] of Carlisle. The patient was operated upon for a duodenal ulcer causing hæmorrhage; attacks of intestinal obstruction had occurred, and the routine examination of the abdomen disclosed a "growth" in the sigmoid flexure which I excised. Mr. Harold Upcott examined the "growth" and proved its true nature. This discovery led to our active interest in the subject and to the extended observations of Dr. Maxwell Telling in the post-mortem room, and of my own in the operation theatre. Cases soon occurred to show the frequency of the disease. Patients were seen with "left-sided appendicitis" with "vesico-intestinal fistulæ," and with tumours in the left half of the colon believed to be malignant, all the cases proving to be examples of this disease. An examination of several specimens in museums showed that "carcinoma of the colon" was often due to an inflammatory hyperplasia; and the truth of Harrison Cripps's [18] observation that fistulæ between the colon and the bladder were due more often to simple than to malignant disease was confirmed. Our knowledge of the earliest phases of the disease, of its frequency and extent, of the method of formation of the pouches and of the slow rate of increase in many cases is due entirely to the radiologists, among whom that accomplished artist, Mr. O. A. Marxer, deserves mention for his discovery of the "prediverticular stage."

Diverticula are found in all parts of the colon, most commonly in the appendix, least frequently in the rectum. Spriggs and Marxer[54] found them 100 times in 1000 consecutive examinations. They found only five cases in the appendix, where the disease occurs quite frequently in association with chronic appendicitis. I have certainly seen it not less than 200 times. In the rectum it is a cause of multiple fistulæ more often than is supposed; the failure of many operations for this condition is owing to a lack of appreciation of this truth. The cause of the condition is a yielding of the intestinal wall, assumed to be the result of long-continued increased pressure within the lumen of the intestine. The gut yields at its weak places, at points where vessels pass through the muscular coats, or where appendices epiploicæ are attached. The mucosa stretches the muscular coat, and finally perforates it as the diverticulum increases in size. I am of the opinion that in some cases at least the disease may be congenital in origin. For the smaller pouches may show all the coats of the intestine, in this sense being "true"; and the history of the case occasionally dates back to the early years of life. There is certainly in some cases a muscular weakness of the intestinal wall, which makes the development of diverticula more easily possible. The shapes of diverticula vary. Often they have the contour of a flask with long, narrow neck and oval cavity. Into the cavity fæcal material enters through the tubular neck, and finds difficulty in escaping. As it lodges there in slowly increasing amounts it enlarges its containing cavity, and at last may set up inflammatory changes.

Conditions Developing in Diverticula of Large Intestine.

The following conditions may then develop:—

1. *Diverticulitis.*—Attacks of acute and subacute inflammation due to infection of the diverticulum by its retained and septic contents.

2. *Peridiverticulitis.*—Inflammation round a number of diverticula results in a large indurated solid mass; the intestinal wall becomes greatly thickened and there is often a close mimicry of carcinoma.

3. This inflammatory phlegmon may undergo cicatrisation and contraction, causing a *stenosis;* in consequence of this *obstruction* of the intestine, acute, or chronic, or acute supervening upon chronic, may occur.

4. *Local peritonitis* around the diverticula, in consequence of their deeper penetration of the intestinal wall, with infection of the peritoneum clothing the outer surface of the gut. This may result in *adhesions* between the involved intestine and any neighbouring viscus or the abdominal wall. *Fistula* may form and lead to the small intestine, the bladder, or on to the anterior abdominal wall or ischio-rectal fossa. Vesico-intestinal fistulæ are more frequently due to diverticulitis than to any other cause.

5. As the diverticula deepen, ulceration may occur at the base of them and in consequence a *perforation* may result. In this way acute general peritonitis, subacute localised peritonitis, a localised abscess, or suppuration in a hernial sac may be caused.

6. *Chronic mesenteritis* may be caused by the diverticula insinuating themselves between the leaves of the mesocolon, especially of the sigmoid flexure.

7. *Carcinoma* of the colon or the rectum may be a result of the chronic irritation of the stagnant and putrid contents of the diverticula. Judd and Pollock doubt whether the incidence of carcinoma is greater in the patient suffering from diverticulosis than in the normal individual.

A "prediverticular state" of the colon has been thus described by Spriggs and Marxer.[55]

"The appearance (in the radiograph) is characterised by a ragged outline of the wall of the bowel which does not dilate even in the most favourable position. If one aspect only of the wall is involved the contraction is less. This appearance is not the result of irritation from the small hernia but precedes their formation."

They believe that in this stage there is a weakening of the intestinal wall due to thinning of the muscular coat, which allows the penetration of the mucous membrane under pressure.

Symptoms.—Multiple diverticula may exist without causing any clinical manifestations. Vague intestinal discomforts and some causes of "colitis" are explained by their presence. Chronic constipation is their frequent, but certainly not invariable, antecedent. Constipation may sometimes be the cause of spurious diarrhœa, the bowel, though discharging its contents freely and frequently, shows on X ray examination an inertness responsible for delay in the passage of the fæcal mass. As the pathological changes advance the following clinical groups may be recognised:—

1. *Inflammatory.*—The patient suffers from recurring attacks of greater or less severity, in which localised pain, tenderness, rigidity, and swelling are present. Temporary intestinal difficulty accompanied by vomiting may be observed. The symptoms are so similar to those caused by inflammation of the appendix that "left-sided appendicitis" is spoken of in many instances. A large phlegmon occupying the iliac fossa is not seldom found and in two cases of mine proved to be caused by diverticulitis associated with actinomycosis. In other forms an acute general peritonitis is found, and at the operation a perforated diverticulum is disclosed. A case of perforation of a cæcal diverticulum mimicking acute appendicitis is recorded by Pereira.[44]

2. *Obstructive.*—Chronic intestinal difficulty, with periodic attacks of exaggerated difficulty amounting to temporary obstruction, is not infrequent; in the severer cases a complete intestinal obstruction may be present. The symptoms resemble those of carcinoma.

3. *Fistulous.*—The passage of fæcal matter and air by the urethra indicates that a communication exists between the intestine and the bladder. The opening may be seen with a cystoscope. The frequent cause is a diverticulitis of the sigmoid flexure. Fistulæ may open on to the skin of the abdominal wall, or rarely on the buttocks and in the ischiorectal fossæ.

4. *Pelvic.*—An inflammatory mass is found in the pelvis, and in the female is attributed to disease of the uterine adnexa. The symptoms are often very similar to those of salpingitis and pyosalpinx.

The association of diverticula with infections elsewhere, especially in the teeth or in the facial sinuses, must be remembered. *Bacillus coli* infection of the bladder or kidney is sometimes associated with this disease, but rather as an effect than as a cause.

DIAGNOSIS AND TREATMENT.

Increasing experience of this disease allows a diagnosis to be made with accuracy in the more pronounced types. But all clinical evidence is subordinate to that offered by the radiologist. In cases where a tumour is present, the duration of the disease, its wavering course, the liability to attacks of inflammatory disturbances alternating with intervals of freedom, the absence of blood in the stools, the presence of mucus in excess, will all suggest a simple rather than a malignant origin.

In the great majority of cases *medical treatment* will keep the symptoms in check. All possible sources of infection must be investigated. A diet leaving little residue is the one generally advised, but I am not sure that a diet leaving a bulky residue is not better, provided that the bowels act once or twice daily. Paraffin is given twice daily, at first in amounts as large as the patient can tolerate, and later in diminishing amounts. A large soap-and-water enema slowly administered once every week or ten days may be given, especially in the earlier months of treatment, and a very large dose of bismuth may usefully be administered from time to time in the hope of subduing infection. Operative treatment is directed only to the needs of the severe cases. The extent of the disease in some cases makes removal prohibitive. I have performed colotomy in cases of severe obstruction, and after the lapse of one or two years have been able, after the disappearance of the tumour, to close the intestine. The first case upon which I did this occurred in a patient now 86 years old. Mayo Robson had performed colotomy for a large mass low down in the pelvic colon causing obstruction. The lump gradually disappeared and the lumen of the bowel became patent. There has been no intestinal difficulty since the closure, and the patient has survived a prostatectomy subsequently performed. The general surgical indications and methods need no special mention here.

I was recently reading once again the life of William Hey, the founder of the Leeds Infirmary, and the first of the Hey dynasty, which served our hospital from 1767 to 1895. The account of his illness, death, and post-mortem examination leave me in no doubt that diverticulitis had led to a perforation of the large intestine.

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Few subjects in surgery are so littered with inaccurate references and incorrect names as this. With the help of Mr. Powell, of the Royal Society of Medicine, I have prepared the above list. I am greatly indebted to Prof. J. Kay Jamieson for his dissections, which made clear the point of origin of the lateral pharyngeal diverticulum.

MULTIPLE DIVERTICULA OF THE COLON.

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(WITH ILLUSTRATIVE PLATE.)

Introduction.

IN the course of the observation and treatment of 208 cases of multiple diverticula of the large intestine it has been possible to study a great number of instantaneous photographs of the affected part of the bowel and, in some cases, to watch the progress of the disease over a series of years. Many of these observations have been reported in former papers.[1] It is proposed in this account to set forth the radiographic features of the stages of diverticulosis in somewhat more detail, and to summarise the clinical aspects, which have been more fully described elsewhere.[2 3 4]

The definition we suggest for diverticulitis and the sections on ætiology, prognosis, and treatment, also some of the illustrations, are based upon the remarks made, and the slides shown, by one of us in opening the recent discussion on diverticulitis at the Royal Society of Medicine.[4]

Multiple diverticula of the colon have been recognised for over a century by pathologists, but not till the last ten years, since the radiology of the bowel has grown more precise, has it become known how often they are present, and are the cause of disease. A summary of the history of the subject is given in a former paper in the *Quarterly Journal of Medicine*.[2] References will there be found to various papers up to 1924, including the monographs of Bensaude, Caine, and Hillemand (1913) and of Telling and Gruner (1917), who give large bibliographies. Papers we have been able to consult which appeared from 1925 to 1927 are mentioned in the report on the above-mentioned discussion.[4]

Statistics.

Some stage of diverticulosis of the large intestine was found in 10 per cent.[5] of 1000 consecutive patients admitted to this hospital in whom an X ray examination of the alimentary canal was made, two men being affected to one woman. From this frequency it may be assumed that it would also be found in some of those complaining of symptoms not thought to concern the alimentary canal, and who were not examined with barium. Further, since half the people with small diverticula of the colon suffer no inconvenience therefrom, they are probably present in a not inconsiderable proportion of the general population over 50 years of age.

Diverticulosis is nearly always found in the latter half of life. The average age of 1000 patients was 45, that of 100 diverticulous ones being 58. The condition has been described in children, but is rare; the youngest in our series was 25.

The distribution of the diverticula in 166 consecutive cases was as follows:—

Pelvic colon ..	.. 120	Whole colon ..	.. 24
Descending colon ..	79	Cæcum ..	.. 8
Ascending colon ..	33	Appendix ..	.. 6
Transverse colon ..	33	Rectum ..	.. 4

[1] Proc. Roy. Soc. Med., Surg. Sect., 1920, xiii., 65.
[2] Quart. Jour. Med., 1925, xix., 1–34.
[3] Brit. Med. Jour., Jan. 23rd, 1926.
[4] Proc. Roy. Soc. Med., 1927, xx., 665.
[5] Since our former papers were published a certain number of patients has been admitted in whom the disease was already suspected or diagnosed, increasing the incidence by selection. But that was not the case during the time from which the above-quoted series was taken.

The Stages of Diverticulosis.

We have previously described the following stages in the development of multiple diverticula of the colon.

(1) *The Prediverticular State.*—This is illustrated by the full page photograph, Fig. W, which shows a large piece of the descending colon at this stage. The normal segmentation of the bowel is absent, being replaced by a ragged outline of little convex irregularities. These are best seen quite close to the arrow leading from the word "colon," but are evident along the whole course. This photograph (which we have published formerly but in a much smaller size) is a good one for showing what is meant by the prediverticular state, but it is seldom that so large an area of the bowel wall is involved. The prediverticular state is often seen along one side of the bowel only; it may be seen in even part of one haustrum (Fig. A), the rest of the haustra and the opposite aspects of the bowel wall showing healthy outlines. In nearly all cases small diverticula can be seen in some part of the bowel at the same time as the prediverticular state, or if the case is observed again at intervals they will be found to develop at that area. This stage precedes the formation of the pouches, and it is apparently associated with some weakening of the submucosa and of the muscular layers; it is while the prediverticular state is in evidence that the minute herniæ, which subsequently form diverticula, are pushed between muscle-fibres.

(2) A stage of irritation is often seen to follow the prediverticular stage. This is shown on the lower border to the right in Figs. C and S. Since the prediverticular state was first described, some writers have mistakenly regarded that appearance as what was meant. The larger concertina-like appearance, however, is usually to be observed in a part of the bowel which has formerly been in the prediverticular state.

(3) *The Developed Diverticula.*—These are of various sizes and shapes; some of them, even large ones, may contain all the coats, including muscle-fibres, as is shown by the fact that they can be observed to contract. In a few instances even large pellets of fæces can be passed out of them from time to time if the necks are wide enough and not inflamed. Indeed, these masses appearing in the fæces have sometimes been called soft gall-stones. Others of the developed diverticula show very little muscle-fibre. The shadow obtained with barium meal or enema differs according to the width of the neck of the pouch. If the neck is wide enough the barium may enter the whole of the diverticulum and fill it, as shown in some of those in Fig. V (illustrative plate). If the neck is narrower the barium does not displace the former contents, but fills only the lower part of the pouch lying next to the neck, giving a crescentic shadow such as is also seen in Fig. V. These crescentic shadows are characteristic. When the neck of the diverticulum is very narrow, material cannot get out and hardens *in situ*, forming what is called a stercolith. A stercolith of long standing may cause a shadow which can be recognised without a barium meal.

(4) *Diverticulitis.*—At this stage inflammatory processes arise about the necks of pouches, especially of those containing stercoliths, and spread to the wall of the bowel, giving rise to a local colitis or pericolitis.

Method.

The opaque meal found to give clear pictures of detail consists of 120 g. of barium sulphate suspended in 500 c.cm. of Horlick's malted milk or buttermilk. This appears to fill every crevice in the colon, and has often shown diverticula that had remained undetected with other suspensions. The enema consists of 400–450 g. of barium sulphate made up to two pints with buttermilk, warmed to body temperature. The meal enables certain points to be observed; the enema others. For example, the former, which mixes with the secretions and is more like the natural ingesta, shows the distribution of the food and its rate of

passage along the gut, especially before and after defæcation, any constrictions or spasm, and the position of the ingesta at times of pain or discomfort; it may also fill stercolith-bearing diverticula better than the enema; whilst with the latter it can be seen how far the different parts distend normally or are constricted. In over 200 cases observed with both meal and enema, in only two did the enema fail to show diverticula.

Both screening and radiography must be employed, the one guiding the other, all parts of the bowel being brought into view at some time with either meal or enema. If this cannot be done the examination is so far incomplete. This applies especially to cases in which diverticulitis is suspected. The mere demonstration of residues showing the presence of diverticula must not be the height of the radiographer's ambition. All possible data must be gathered to ensure a reliable judgment as to diagnosis, prognosis, and treatment.

It is reported that diverticulitis may be present without radiographic demonstration of diverticula. This is not yet within our experience, but is, of course, possible, though unlikely if both meal and enema are used. In any case a localised diverticulitis, even after all pouches have been deformed beyond recognition, has the characteristic appearances described below.

The normal bowel wall is generally engaged in a slow contraction or dilatation. This can be demonstrated by taking serial films at one second's interval, with an instrument like a slow cinema camera, designed by one of us. When such a film is placed accurately upon another one the extent of the movement can be seen. A rigid piece of bowel wall, the seat of diverticulitis, shows no movement and can by this means be recognised.

When a lesion lies within reach of the sigmoidoscope that instrument should be employed. With suitable preparation and care its use should be painless, and no general anæsthetic needed.

A = Normal haustra below and small patches of prediverticular state above.
B = Areas of prediverticular state involving circumference of bowel and causing apparent ring constriction.
C = The same piece of bowel (as B) after treatment. No constriction. Irregularities, the aftermath of prediverticular state, also small pouches in formation.
In all these figures (A *to* U) *the text should be consulted for the full description.*

Development of Diverticula.

The radiographic appearance of scalloping in the normal colon is known as haustration, and any single scallop as a haustrum. The lower silhouette of Fig. A shows such a normal outline of a barium-filled bowel; the dotted line represents the peritoneal surface. The arrows on the left of the letter "A" indicate the haustra.

The deep indentations which almost bisect the lumen of the colon determine the segmentation (see the two arrows on the right of the letter "A"). They are regular and symmetrical unless the bowel be bent at an angle. The contractions of the muscle-fibres cause the segmentation, which affects all the layers of the bowel wall. The peritoneum may indicate the clefts or divisions between the haustra, but does not enter them.

A simple mucosal lesion of the bowel does not always give radiological signs of its presence, but when the submucous and muscular layers are involved the normal segmentation of the colon is altered and the change is visible.

The temporary absence of segmentation during mass movements is called inhibition.

In the following more detailed study of the development of diverticula each figure is, unless otherwise stated, an exact tracing from a photograph, and not a diagram. The black area is the barium-filled lumen of the bowel.

Prediverticular State.—In the early prediverticular state, if only small patches are affected, the shape of the haustrum may be almost unaltered, provided the patch is not near an interhaustral cleft. If it is, a curtailment in depth and a displacement of the cleft result.

Fig. A is a tracing from a stretch of sigmoid showing such a spread-out haustrum. The small indentations denote the prediverticular state. The arrow above points to a minute hernia or diverticulum. Owing to the diverticulosis the upper two haustra have come together, the cleft between them having almost disappeared. This shows how the irregular segmentation arises in a diverticulous bowel. On the opposite aspect of the bowel, the lower in this photograph, both haustra and clefts are regular. If the prediverticular state involves large areas, haustration may become unrecognisable, and segmentation disappear. If only one side of the bowel is involved there will be interference with the diameter of the lumen; when the whole circumference of the bowel is implicated, narrowing is considerable, and a ring constriction may be simulated.

Fig. B shows such a piece of bowel. Part of the upper border was prediverticular, and another short stretch is involved in its whole circumference. Note the consequent encroachment on the lumen as compared with the lumen in Fig. A.

Fig. C shows the same stretch of bowel after treatment. There is now no constriction. Small pouches are visible on both borders, shown by arrows.

In the prediverticular state the circular muscle-fibres are contracted, as is shown by the narrow lumen, and the mucosa is thrown into narrow folds. It may be presumed that the longitudinal fibres are also involved. After the passing off of the prediverticular state the haustra and the clefts between them tend to lose their symmetry. The appearance suggests that muscle-fibres are damaged, being thinned in places, with corresponding bunching in others, as when an elastic band is cut or weakened in one place. Judging by repeated observations at intervals of a year or more, any given haustrum tends to remain distorted

D = Small narrow-necked diverticulum retaining fæcal material.
E = The same diverticulum four years later.
F = Large stercolith-bearing diverticulum. The dotted line shows the position at phase 1 of a serial film, the continuous outline at phase 2—i.e., one second later—demonstrating the movement of a haustrum.
G = Also from serial films showing the maximum contraction of this haustrum.

in the same manner, and this haustral asymmetry may persist in an otherwise flexible diverticulous bowel.

This is the stage 2 mentioned above. See the irregular nondescript contractions deforming the lower border of the bowel in C, the aftermath of the prediverticular state. This appearance occurs without excess of fat or evidence of any thickening of the wall.

Formation of Pouches.—When the small hernia forms, local conditions determine the size and position of the orifice, and upon these depend the type of pouch which will be developed.

In Carman and Miller's book on the "Roentgen Diagnosis of Diseases of the Alimentary Canal" (1917, p. 471) is an excellent photograph of a microscopical section, showing a pouch of mucous membrane penetrating the muscular layer.

We have pointed out in former publications that the rate of emptying of a pouch depends on the size of its neck. This consideration, which is obvious enough, grows in importance with further study of small diverticula. The pouch which is likely in the future to set up diverticulitis is the one which cannot easily discharge its contents, and which barium enters in part only, giving a crescentic shadow. The content of such a pouch is liable to become inspissated and form a stercolith. We find that some pouches show these characteristics at a very early stage, for we see often minute herniæ with the appearance of stercolith-bearing diverticula.

Fig. D shows such a diverticulum at an early stage. The bowel wall from which it arises is soft and flexible. The small pouch itself is spherical, but owing to its narrow neck it retained inopaque material when the food residues left that part of the gut, and there was no room for the opaque barium mixture except at its basal part.

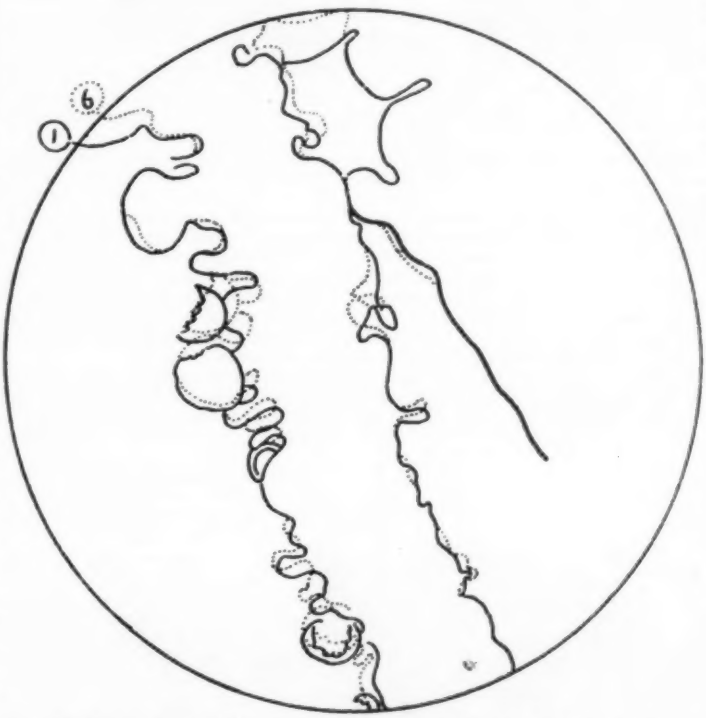
Fig. E is from the same case four years later. The haustrum is unaltered, though the pouch is much bigger. As before, the barium has crept round the fæcal content near the neck.

Fig. F shows two phases of a serial film. There is a pouch with a stercolith. The dotted line shows the position in phase 1, and the continuous outline that in phase 2. There is a moderate degree of contraction of the dome of the haustrum.

Fig. G, a later phase, shows the maximum contraction. The neck of the diverticulum is no longer showing, which means that its mucosal surfaces were apposed.

Fig. H shows tracings of two instantaneous photographs at about six seconds' interval—i.e., phases 1 and 6 of a serial film, from the descending colon of Fig. V, superimposed, phase 1 being the continuous, and phase 6 the dotted line. The bowel wall is seen to be mobile, with its diverticula. The large diverticulum at the top on the left is capable of contraction. The stercolith-bearing one below it keeps its shape, but its position has changed with the movement of the part of the bowel from which it arises.

FIG. H.



H = Tracing of two instantaneous photographs from the descending colon shown in Fig. V, being phases 1 and 6 of a serial film—that is, at about six seconds' interval—superimposed. Phase 1 is the continuous and phase 6 the dotted line. (See description of Fig. V.)

The Onset of Inflammation about a Diverticulum.—Fig. I shows again a pouch containing a stercolith. The block is, as before, the tracing of an actual film. The dotted line represents schematically the peritoneum. This is taut over the stercolith where the other coats of the diverticulum will also be thinnest. This is why such pouches are stiff and more spherical; whilst those with flexible muscular walls become somewhat pear-shaped during contraction.

When inflammation sets in there is a limitation of the flexibility of the bowel wall. The study of serial films at intervals shows that rigidity—i.e., inflammatory change—begins at the necks of diverticula, and particularly of those which carry stercoliths. Tension or friction in the narrow neck suggests itself as a cause, though perhaps stagnation beneath a stercolith is an equally harmful factor. Dr. A. P. Cawadias [6] has described the microscopical appearances in diverticula which emit fæcal material with difficulty, the round-celled infiltration extending towards the serous envelope.

The earliest radiological sign is an encroachment on the haustrum as shown by a widening of the re-entering angle between the diverticulum and the bowel. This cup-shaped widened angle is shown by the arrows in Fig. J. The encroachment is seen most plainly during inhibition. It may be symmetrical or one-sided; in the latter case there will be a tilting of the diverticulum. In other words, two deep indurations, which have the appearance of invagination, are seen during stages of relaxation.

Fig. K is a tracing from another film. The arrow shows such early inflammatory changes. Note the apparent sinking into the haustrum of the diverticulum. The peritoneal surface is added schematically, the shaded area representing fat.

In Fig. L the inflammatory thickening (often called hypertrophy) is more advanced and is asymmetric. The lumen of the neck does not show; it is squeezed and contains no barium.

[6] Proc. Roy. Soc. Med., loc. cit., p. 691.

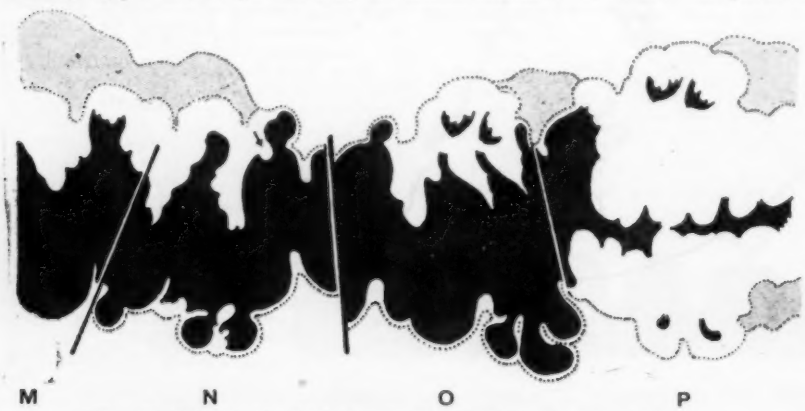
The inflammatory exudation and resulting fibrosis may affect certain wide-mouthed diverticula in quite another way, opening their orifices until nothing is left of the pouch but a stiff V-shaped irregularity with the open part facing the lumen. The small projections from the black shadow on the upper border in Figs. M and N show the remains of such pouches.

On the lower border in Fig. N two diverticula show evidence of thickening and rigidity of the bowel wall, but it is possible that they have been reached by extension of the process from the opposite side, just as the otherwise natural haustrum at the right on the upper border shows evidence of encroachment (see arrow). As the fibrous thickening increases at the expense of the haustrum, the more the stercoliths become separated from the lumen, as in Fig. O, which shows 4 cm. of bowel much involved on one side by inflammatory changes. The dark isolated crescentic areas represent barium which entered by a narrow channel not visible in the film, and lies beneath stercoliths. The diverticular necks appear to be, and no doubt almost are, obliterated. The opposite, lower, aspect shows two large flexible diverticula; the haustra from which they arise, as well as the adjacent haustra, were over-active.

Fig. P is from the same piece of bowel as O, but four years later. It shows how far the stercoliths have become separated from the exceedingly narrow lumen. The affected area is remarkably localised, for immediately below it (to the left) the lumen widens abruptly to its natural diameter. This point was about 28 cm. from the internal anal sphincter.

I J K L

I = A stercolith-bearing diverticulum during maximum contraction of its haustrum. The peritoneum is shown diagrammatically.
J = Widening of the re-entering angle at the neck of a diverticulum, the earliest radiological sign of inflammatory thickening of the bowel wall.
K = Early inflammatory thickening showing the peritoneal surface schematically.
L = More advanced thickening. Note distance of lumen from peritoneal surface. Cf. I.



M N O P

M = Great thickening of bowel wall. Diverticular necks opened up.
N = Evidence of spreading of inflammatory changes to opposite lower wall.
O = Isolation of diverticula from the lumen of bowel.
P = The same four years later showing advanced obliterative stage.

The characteristic radiological sign of diverticulitis, as mentioned below, is rigidity of the deformed bowel wall (Fig. Y on illustrative plate and Fig. Z).

Inflamed mucosal folds give confusing appearances in diverticulitic films. Serial photography is often the only means by which they can be differentiated from the fibrous thickening of the outer layers of the gut. These folds are, of course, transparent to X rays and form the apparent clefts between the opaque barium-filled haustra. In Fig. Q mucosal folds (see arrows) have swollen into massive jagged nodes. The peripheral inflammatory thickening was slight; there was enough to give some small diverticula an invaginated appearance, but not enough to prevent the bowel wall on which they lay from registering some movement in serial films. To the right of the middle of Q, however, the palisade appearance is significant of massive inflammatory change. This patient was operated upon and these conclusions confirmed. The figure is typical of the radiological appearance which would be given by many specimens of diverticulitic bowel such as are removed occasionally at operation, or, more often, post mortem.

Swollen folds of mucous membrane are also the cause of the bulky invaginations in the shadow on the lower aspect of Fig. R, shown by arrows. The rifts in the upper border of the shadow have the same cause. It could be seen in serial films that when the haustra contracted so that the lumen was almost a thread, yet these did not recede or alter in size. The bowel passes on the left into almost normal segmentation. In this case areas of the prediverticular state and some minute diverticula were found close to the inflamed area.

Association of Early Diverticulosis with Diverticulitis.—We have several times observed that early disease—i.e., either the prediverticular state or very small diverticula—is found close to an area of old-standing diverticulitis with stercoliths, all three stages together, and that in cases which have suddenly flared up, threatening obstruction. It would be expected that the younger areas of disease had arisen from the older. But early diverticulosis occurs in patches, and in two of our cases one of these separate areas appeared to be creeping towards the hypertrophic area rather than arising therefrom. However this may be, it appears as if the encroachment of the new upon old-standing disease had aggravated the chronic inflammation.

Fig. S is from a radiograph of a piece of bowel which is the seat of early and late stages of the disease. The arrows point to minute diverticula in process of formation in an area of the prediverticular state. On the upper border are stercoliths and established rigid diverticulitic fibrosis.

Fig. T is from a patient who was admitted after an attack of subacute obstruction. We could not find evidence of inflammatory thickening though numerous large diverticula were present and some small ones. Seven years later he had a recurrence of subacute symptoms and was readmitted. The same piece of bowel now gave Fig. U. Small areas of the prediverticular state were seen and some minute pouches. No evidence of gross thickening could be found in spite of careful search. As there is no evidence of inflamed mucosal folds, although the last attack was recent, it appears probable that the threatened obstruction was due to severe spasm. The discomfort

or pain corresponded on each occasion with the formation of new diverticula. (See also Fig. X on illustrative plate.)

Ætiology:

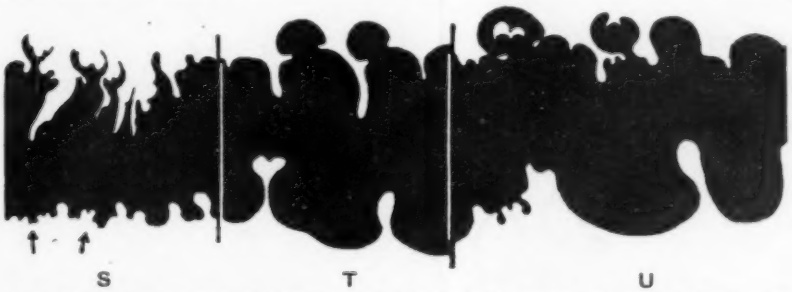
The ætiology of the disease is not yet understood. In the first stage (the prediverticular state) there is irritation of the bowel wall with tenderness in that area on the X ray table and in some cases, in which a large part of the bowel is involved, pain is complained of clinically, though generally this stage is passed unnoticed by the patient. We have brought forward evidence[1] to show the frequent association of early diverticulosis with septic foci in other parts of the body, particularly the teeth, and with early arthritis of the spine—i.e., spondylitis. This evidence leads to the view that the change is an inflammatory one in the first instance, probably bacterial, and not degenerative or passive. That the small herniæ are prone to occur where the blood-vessels penetrate the bowel wall has been taken as evidence that they are passive extrusions from the beginning. The lymphatics also penetrate with the blood-vessels, and it is possible that any inflammatory process, which would affect them more than the blood-vessels, would lead to weakness in their neighbourhood.

How much constipation plays a part is not known. The subjects are frequently constipated, but apparently not more so than other patients. It is delay in the pouch, rather than in the bowel, which is harmful.

Flatulent distension of the bowel would be expected to aid in the formation of pouches and to cause enlargement of those already formed whose lumen is

Q R

Q = Shows the picture given by inflamed mucosal folds, also some small new diverticula superimposed on an old area of diverticulitis.
R = Swollen folds of mucous membrane shown by arrows; also acute prediverticular stage supervening on chronic diverticulitis.



S T U

S = Acute early diverticulosis (lower border) supervening on an area of old diverticulitis (upper border).
T = Diverticulous bowel.
U = The same piece of bowel seven years later showing new disease supervening on the old area of diverticulosis.

communicating with the bowel. The most serious result of diverticulosis, however—namely, the development of diverticulitis—arises from diverticula which have been almost completely blocked and would be least subject to changes of pressure from the interior of the bowel. It has been suggested that excess of fat plays an important part in the early stage of diverticulosis. The statistics of our cases, however, show that the diverticulous are not heavier than other patients of the same age and sex. In later stages, when diverticulitis threatens, fatty tissue around the bowel is probably less able to resist a spreading infection than the more vascular non-fatty peritoneum.

We have not observed any special association between spasm of the bowel and diverticulosis.

[1] Quart. Jour. Med., loc. cit.

Symptoms.

As a rule, in the *prediverticular state*, no symptoms are recognised, though with increasing experience this rule is found to have exceptions, especially if large areas are involved. The area of the bowel affected, as observed with the X rays, is often in a more irritable condition than when diverticula are established, and is sometimes tender to palpation on the X ray table. In one case pain had been complained of in the lower and left parts of the abdomen for some weeks. A great part of the descending and pelvic colon was found to be tender and in the prediverticular state, and the symptoms yielded to treatment. In another in which the colon was strewn with patches of the prediverticular state, pain was complained of as the barium entered the affected part of the bowel. In another in which most of the descending and pelvic colon was in the prediverticular state, these parts of the gut were tender and rigid, and there was aching over the sacrum after evacuation.

The stage of *established diverticula*, short of diverticulitis, may be quiescent for years. In our series half the subjects complained of no symptoms referable to the pouches. In the others there was some clinical evidence of irritation of the bowel, or, less often, of the peritoneum or bladder. The symptoms mentioned were, in order of frequency, flatulence, pain, distension or indigestion, generally below the navel and most often on the left side, pain or discomfort before or after defæcation, diarrhœa, or alternating constipation and diarrhœa. A few have irregularity of, or discomfort with, micturition.

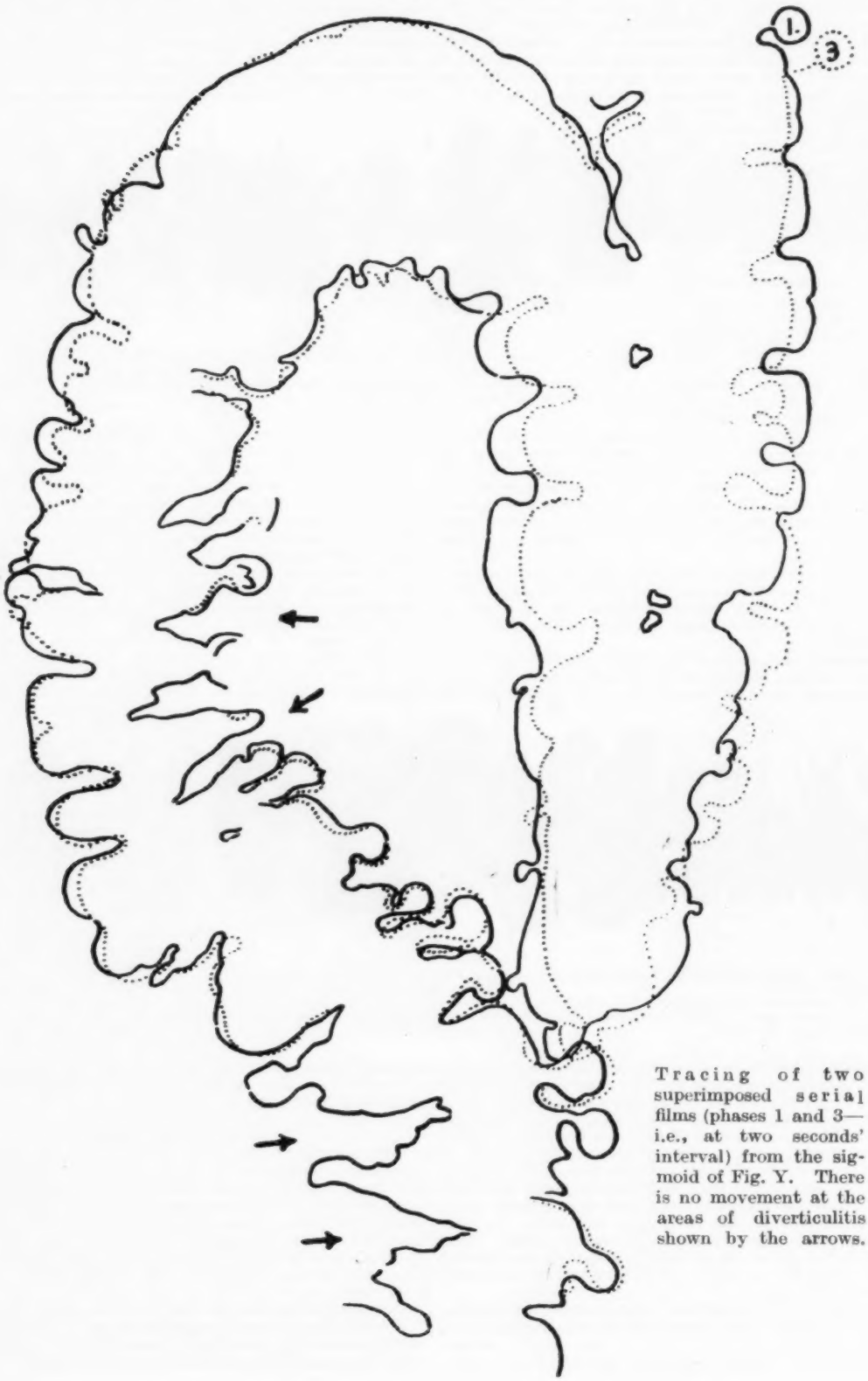
The symptoms of *rupture of a pouch* into the peritoneum are those of an acute local or general peritonitis. This accident is fortunately uncommon. The symptoms of diverticulitis are described in the following section.

Definition of Diverticulitis.

Diverticulitis is the final stage of diverticulosis, at which the small pouches, as already described, become involved and destroyed in the chronic inflammatory process which in the first instance arose in themselves. Sir Berkeley Moynihan drew attention to the clinical importance of this disease in 1907. Dr. Telling's papers (1908 and 1917), from the same school, are an exhaustive pathological and clinical study of the condition.

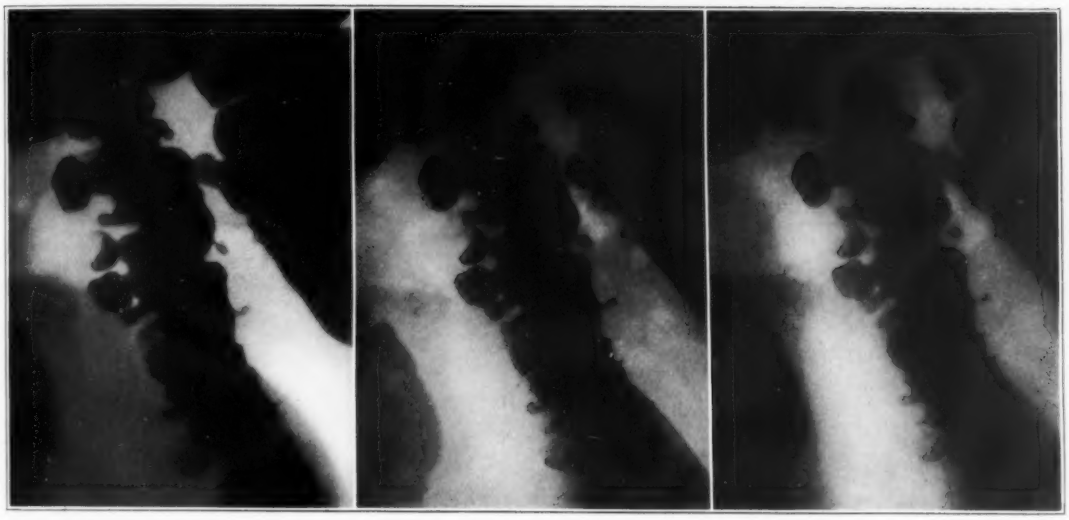
Some seven years ago one of us proposed the term "diverticulosis" for the earlier stages of the disease, which are often free from symptoms, and always, with the exception of the occasional rupture of a

FIG. Z.



Tracing of two superimposed serial films (phases 1 and 3—i.e., at two seconds' interval) from the sigmoid of Fig. Y. There is no movement at the areas of diverticulitis shown by the arrows.

FIG. V.



Diverticulosis: Lateral views of descending colon; serial pictures, films 1, 3, and 6. There is some deformity but no rigidity as shown by the super-imposition of films in Fig. H. The bowel seen on the right of the picture is the transverse colon.

FIG. X.

FIG. Y.

FIG. X.—Advanced diverticulosis of the descending colon. No spiked processes or rigidity. The absence of diverticulitis was confirmed at an operation for duodenal diverticulum and gall-stone, the sigmoid being found soft and flexible.

FIG. Y.—Sigmoid showing two areas of diverticulitis; these parts are rigid (see Fig. Z). Note the jagged V-shaped outline of the immobile parts.

DR. E. I. SPRIGGS AND MR. O. A. MARXER:

MULTIPLE DIVERTICULA OF THE COLON.

MULTIPLE DIVERTICULA OF THE COLON.

FIG. W.

Oblique view of a prediverticular state of the pelvic colon. Note the shallow convex impressions on both outlines, from the pelvic brim upwards. These are not to be confused with the deep serrations caused by spasm in other phases of the disease. Note also how the colon simulates the appearance of the normal small bowel. No diverticula yet present in the portion of bowel on the right; small early ones can be seen to the left, near the pelvic brim.

single pocket, free from severe symptoms. We did not know until this year that de Quervain,[8] the Swiss surgeon, had made the same proposal in 1914 in a paper not then accessible to us. Any degree of irritation and inflammation arising in a pouch may logically be described as diverticulitis. But in practice a distinctive term is needed for the later stage, which constitutes a definite and serious disease from which most of the subjects of diverticulosis never suffer.

The *clinical features of diverticulitis* are those of a low form of inflammation in the large bowel, usually in the left lower abdomen, spreading to neighbouring structures.

Abdominal discomfort, less often pain, not as a rule related to food, is situated about or below the navel, but especially in the left iliac fossa. It may be intermittent, with intervals of several weeks or longer. The pain may be severe, and is often accompanied by a general feeling of ill-health; it may take the form of a dragging sensation and backache. General flatulence and a feeling of distension are usually mentioned and may be the only symptoms; an advanced state of diverticulitis may, indeed, be present with but little complaint; in several there was no actual pain.

Constipation, irregularity of the bowels, diarrhœa, or a sense of incomplete evacuation is frequent. The increasing constriction leads slowly, usually very slowly, to obstruction.

In cases of implication of the bladder there may be *frequent micturition*, sometimes painful, after the bowels are opened; or a painless micturition may be followed by pain in the tumour.

A sausage-shaped *tumour*, sometimes tender, but not always, can be felt in the left iliac fossa, except in the very obese. It may become acutely inflamed, with pyrexia and vomiting. Diverticulitis sometimes occurs at other parts of the colon.

Hæmorrhage, per rectum, excluding that from piles, we have seen three times, but it is not usual, the inflammatory lesion lying as a rule without the mucous membrane.

The *radiological features* of diverticulitis are definite. With a barium meal or enema, typical rounded, oval, or crescentic shadows of the barium in the diverticula will usually, though not always, be recognised in the neighbourhood. They are not, however, the characteristic features; these, which we have already described above in detail, are the spike, or palisade-like projections of barium shadows from the lumen of the bowel, the wall of which is thickened (from inflammatory exudation) and fixed. Serial films, when superimposed, show no variation in the outline of the shadows, although there may be vigorous and irritable contractions of the bowel wall above and below, or even in the same part of the gut opposite to the rigid area. (See Fig. Y on illustrative plate and Fig. Z.)

The *pathological features* are those of a chronic inflammation of the pelvic colon, arising at first from one or more diverticula, but now involving all the coats of the gut, including, sooner or later, the peritoneal coat, and spreading to surrounding parts, especially to the bladder in men, but also, at times, to the uterus, ovary, small intestine, or abdominal wall. An excellent description of the morbid histology will be found in Telling and Gruner's paper. Leucocytosis is frequent. In late stages small, or sometimes larger, abscesses form in the inflamed or septic area. Metastatic abscesses are unusual, but have been recorded.

We put forward [9] the suggestion that the term diverticulitis should be reserved for those cases in which there is the combination of these three pictures—clinical, radiological, and pathological.

Diagnosis.

(*a*) *Clinical.*—Vague persistent or recurrent abdominal symptoms in a middle-aged, well-nourished person, which are not accompanied by physical signs and do not yield to simple medicines such as carminatives or mild purges give rise to the suspicion of *diverticulosis*. The diagnosis can only be established by an X ray examination of the bowel. The recognition of diverticula is not enough, as they may coexist with other lesions. It must be shown, so far as possible, that diverticulosis is the only diseased state which is likely to be causing the symptoms.

The diagnosis of *diverticulitis* is less difficult when a tender sausage-shaped swelling can be felt in the left iliac fossa, especially if there is pain during or after evacuation, but must be established by radiography. The long history, the well-being of the patient in the intervals of symptoms, the absence as a rule of bleeding from the bowel or of much mucus are against malignant disease. The possibility of a left-sided appendicitis will be remembered; also of actinomycosis and pyosalpinx. When suppuration has occurred a differential diagnosis becomes of less importance, for the abscess must in any case be drained.

(*b*) As regards the *radiological diagnosis*, the prediverticular state must be distinguished from colitis. The latter causes inhibition or spasm without affecting the symmetry of the segments; the outline is smooth or any irregularities are nondescript. In the prediverticular state the symmetry is disturbed as above described, and if there is inhibition the irregularities show small twin convex impressions. Pericolic affections, such as tuberculosis, or inflammation where a jejunocolic fistula is threatening, may be indistinguishable in appearance from the prediverticular state.

The *established diverticula* are generally unmistakable. In a highly-placed mid-transverse colon, where good oblique views are difficult to get, there may be confusion with haustral residues; these, however, will become less opaque as the bowel clears. In other parts it should be possible to get a view at the right angle to bring the suspected pouch into profile. A film should be taken after the lumen of the bowel is free from barium.

In *diverticulitis* the above-described rigidity and deformities of the bowel (from J to S) with a narrowed lumen are characteristic. Diverticula, sometimes new ones, will generally be seen near by. If growth occurs at a diverticulous area, the concave (fingerprint) encroachments on the lumen may be recognised.

Prognosis.

Were the outlook judged by the end-results of diverticulitis from the operating and post-mortem rooms of large hospitals [10] it would be grave indeed. A more hopeless condition to deal with than a suppurating sigmoid, involving and infecting surrounding parts, can hardly be thought of apart from active malignant disease. But, as we have shown above, diverticulosis may be quiescent over long periods of time. The cause of diverticulitis is inflammation in a pouch. What chance is there of preventing or allaying this? There is none unless the existence of the pouch is known. If every case of vague persistent or recurrent abdominal discomfort were investigated not only would diverticulosis but many other conditions be discovered at a stage when the most help can be given. The doctor's difficulty is that patients want the aches and pains to be cured by a bottle of medicine or a pill; and when such simple measures do not suffice the patient still would like to "wait and see how he gets on." The loss of health and efficiency from such delays is incalculable.

When a case of diverticulosis or early diverticulitis is recognised the prognosis is good, as a rule, for reasonable health and for life. The disease responds well to treatment. The graver complications occur chiefly in unrecognised or neglected cases. Both before and after inflammatory changes the physician and

[8] Zeit. f. Chir., 1914, cxxviii., 81.
[9] Proc. Roy. Soc. Med., loc. cit.

[10] Fifield, L. R.: THE LANCET, Feb. 5th, 1927, p. 277.

surgeon can, between them, in a watched case, guard against or deal with any developments that are likely to occur. The accident of the rupture of a pouch into the general peritoneal cavity is uncommon, but most of us know of such cases. It has the same risks as any other perforation and is dealt with in the same way.

Treatment and Results.

The medical treatment consists in keeping the body, the alimentary canal, and especially the colon, as healthy and clean as possible; any source of sepsis that can be reached must be removed. The diet should be simple and regular with a good deal of fruit and vegetables. We have described fully elsewhere [11] a diet which is found useful, but the preferences and state of each person must be considered. The bowels are kept regular by diet, paraffin, and especially by attention to habit; this can nearly always be done.

The colon is washed out with saline every other day, for a time, but at low pressure, the funnel being not more than 18 inches above the level of the anus. The fluid runs in at low pressure just as well as, or often better than, at higher pressure, which may provoke spasm. In no case, as we pointed out in our previous paper, should a diverticulous area be massaged. Only recently a man was admitted in whom a quiescent area had been awaked into subacute and painful diverticulitis by a course of massage given in ignorance of his state, with the object of curing the constipation.

We do not yet know to what extent repair may result after treatment of a prediverticular bowel. It is often considerable radiologically (cf. Figs. B and C) and in patients complaining of symptoms these may be entirely allayed. Sir Charles Gordon-Watson has described such a case [12] and we have seen others, one of which is mentioned under the heading Symptoms above. Our observations suggest that in all cases the affected part of the bowel is benefited and the progress of the disease delayed. Neither can we have proof that in the stage of established diverticula medical treatment—i.e., paraffin, douching, removal of septic foci, and attention to general health, prevents the formation of stercoliths. We have, however, evidence that pouches empty their contents more readily after treatment, and stercolith formation would thereby be retarded if not prevented. In most cases the symptoms disappear as a result of treatment. In our series out of 158 patients with diverticulosis of all stages 87 complained of symptoms. Of these 70 were treated by us, 52 of whom were completely or almost completely relieved; 13 others received much benefit.

When *diverticulitis* is established the lavage is continued for longer, and in some cases permanently, at regular intervals. Enemas of 3–6 oz. of warm olive oil are sometimes very useful. It is a great advantage to avoid, if possible, irritation, by regular purges, even a weekly dose of salts. But these must be used if there is a doubt about a sufficient evacuation.

Attention to the general habits of the patient is almost as important as the local treatment of the bowel. One reads, or hears doctors say, that the treatment is this or that. But hardly anyone, certainly no modern man over 50, can be treated entirely out of a book. He is nearly always working, playing, eating, drinking, smoking, or sitting too much, and unless his life be regulated the local measures will not be enough.

It is remarkable how quickly the inflammation may subside in subacute diverticulitis with the above measures. The symptoms may be gone in a week; and we have known a comparison of the radiograms after three weeks show that the lumen was restored almost to normal and the rigid area of bowel wall much lessened.

The patient must be warned about the danger of obstruction. If it threatens, the diagnosis of the degree of occlusion may be difficult. The practical point which has to be decided is whether colostomy shall be performed. The stoppage of diverticulitis can often be relieved even when there is a good deal of abdominal distension and constitutional disturbance. If grave symptoms such as a rising pulse-rate, collapse, and intractable vomiting are not present, and the diagnosis has been made radiologically, then castor oil (with laudanum and hot fomentations if pain is severe) and enemas may be given with confidence. A physical sign of value when improvement begins is the disappearance of resonance on percussion in the left lower quadrant. If, however, it has been found with X rays that there is much dilatation of the bowel above the affected area a colostomy is likely to be needed. But in most cases with continued care, even after severe obstruction, colostomy may be avoided for long periods, or indefinitely. One patient went 11 years after his first attack of obstruction until a colostomy was done; and that would probably not have been needed had he not been abroad and away from close medical supervision. Another had a first attack of obstruction eight years ago. He came under our observation two years later. This patient is still well with regular actions.

Surgical Treatment.

Operation for obstruction from diverticulitis, perforation of a pocket, vesicocolic fistula, and suppuration in the bowel wall with involvement of surrounding structures, are necessary procedures at which the surgeon is an opportunist. He does what can be done.

How far can we control the disease so that these operations of despair may be avoided? The surgical treatment of a perforated pocket we cannot expect to avoid. The accident happens and must be dealt with; indeed it occurs when diverticulitis, as above defined, is not present. An operation for obstruction for a gradually closing irremovable infiltrated area, which cannot be otherwise mitigated, is also a necessity. It is better to do it, however, at a time of choice, when regular X ray observations have shown that the channel is narrowing and the bowel above dilating, and before the added dangers of actual obstruction have arrived.

When colostomy has been done the rest given to the collapsed area, aided by douching, may lead to a great degree of recovery. The swelling subsides and the lumen is restored. Sir Berkeley Moynihan has found it possible to close the colostomy again, in selected cases, to the great relief of the patients.

If, however, the case is recognised, adequately treated, and watched, with a barium enema every year for a simple diverticulosis, and every six months for diverticulitis, the severer complications are, in our experience, rare. The people who get into trouble are generally those whose cases have not been diagnosed, or who, after successful treatment, escape medical supervision and give less and less attention to the bowel as time passes.

Radical surgical treatment is sometimes possible. It is true that the disease tends to spread. But in practice hypertrophic inflammatory processes are generally confined to one area of bowel, and if that area can be successfully resected the patient is cured of diverticulitis. This has been done in a number of cases, as Mr. Lockhart-Mummery [13] described recently. Gerzowitsch [14] has collected 104 from the literature. Of these 54 were cured, 7 died, and the result in 43 was not recorded. If the area can be radiographically defined, is not too low down, and is reasonably free from involvement of surrounding structures, and if the symptoms persist in spite of careful treatment, and the patient is in good condition otherwise, he may be offered exploration with a view to resection.

[11] Quart. Jour. Med., loc. cit.: Brit. Med. Jour., loc. cit.
[12] Proc. Roy. Soc. Med., loc. cit., p. 682.

[13] Lockhart-Mummery, J. P.: Proc. Roy. Soc. Med., loc. cit., p. 694.
[14] Gerzowitsch, M.: Schweiz. Med. Wochenschr., 1925, vi., 174.

AN ANALYSIS OF THE CAUSES OF BLINDNESS

AMONG THE PUPILS OF THE SCHOOL FOR THE BLIND, SWISS COTTAGE.

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THE London Society for Teaching and Training the Blind has under its supervision about 500 blind individuals of whom, according to their latest report, 84 are between the ages of 5 and 16, all resident school-children at the Swiss Cottage Blind School, 62 pupils between 16 and 20, most of them resident either at the school or at the Girls' Hostel, and 47 adult pupils, besides upwards of 300 workers in shops and at home, who are able, either partially or (with the assistance that they obtain through the Society in accordance with the Blind Persons Act) wholly, to earn their own livelihood. For the last seven years, as ophthalmic surgeon to the institution, I have had an opportunity of examining all the pupils and some of the out-workers, and the present paper is an attempt to analyse the causes of their blindness.

Degrees of Blindness.

Blindness is a term which needs definition. Only a small proportion of these cases were without the power of perceiving a light when held before their eyes (or eye). Most of them could recognise whether a hand held in front of them was moving or not. Many of them could count the fingers of a hand held up two or three feet in front of them. Some of them could see the largest letter of the ordinary test type at the distance of 6 metres (6/60). A few of them could see better than this.

It is well known that the acuity of central vision is not a wholly sufficient test for the presence or absence of blindness. The visual field may be so small that even with comparatively good central acuity the patient ought to be considered blind in the economic sense. This may occur in glaucoma (which, in children, takes the form of buphthalmos), in optic atrophy, and in retinitis pigmentosa. In all three of these, moreover, the disease is, as a rule, slowly but surely progressive, so that even if the patient is not blind at the time of examination he or she is in imminent danger of becoming so, and, in the case of children, it is wise to educate them, bearing in mind that eventuality. This last consideration also applies to certain cases of high myopia about which I shall say more later.

Classification of Cases under Survey.

The total number examined by me was 255, of whom 150 were males and 105 females, 51 of whom had vision better than 6/60 with full fields, the remainder coming under the definition of blindness recently suggested by the Ministry of Health. Except 16 they were all under 25 years of age. The following is an analysis of these cases in respect of (1) the causes and (2) the extent of their blindness.

1. *Ophthalmia Neonatorum.*

57 examined: 28 males, 29 females.

Vision—No p.l. ..	16	Vision—6/60	6
p.l.	20	Better than 6/60	4
Counting fingers	10	Uncertain ..	1

It will be seen that the degree of blindness among these cases is very extreme. In five of the cases one eye had been excised. In two both had been excised. In most of them the corneæ were unsightly from a dense whitish opacity. In some cases the whole globe was shrunk. In some it was bulging. There was cataract in many, and practically all had nystagmus.

2. *Optic Atrophy.*

37 examined: 25 males, 12 females.

Vision—No p.l. ..	7	Vision—6/60	3
p.l.	19	Better	2
Fingers ..	5	Uncertain ..	1

In these cases the outward appearance of the eyes is generally normal except for the pupils which often do not react to light. Nystagmus is rare since in most of these cases the patients have had sight and acquired the art of fixation in infancy. The causation was as follows:—

1. Congenital syphilis	8
2. Cerebral (one each of dystrophia adiposo-genitalis, cerebral abscess, cerebral tumour, oxycephaly, and vascular lesion at birth)	5
3. Familial	5
4. Following disease (one meningitis, one measles and pneumonia)	2
5. Accident (fractured base)	2
6. Uncertain	15

3. *Syphilis.*

30 examined: 11 males, 19 females. These included (1) interstitial keratitis, with or without choroiditis, 24; (2) choroiditis, without interstitial keratitis, 6. The vision of these cases was better than that of the previous groups.

Vision—No p.l. ..	1	Vision—6/60	3
p.l.	1	Better	11
Fingers ..	14		

Three-quarters of these children were cases of interstitial keratitis, a disease which, though it often causes temporary blindness lasting from three months to two or three years, does not, as a rule, cause permanent blindness. The disease, however, is relatively common and the exceptions who become blind are sufficiently numerous to form a notable proportion of the inmates of all blind schools. In many cases the interstitial keratitis is complicated by choroiditis, cyclitis, or cataract, which partially accounts for the number of those who become permanently blind. On the other hand, it is not infrequent for children whose vision has been given up as hopeless to be admitted to the blind school and improve to some extent in the course of years.

4. *Congenital Cataract.*

31 examined: 20 males, 11 females.

Vision—No p.l. ..	3	Vision—6/60	7
p.l.	3	Better	8
Fingers ..	10		

All these cases, without exception, had been operated on, but many at an age when, nystagmus having already been established, the power of central fixation could not be acquired. Probably in some cases blindness might have been prevented by more timely operative treatment. Many of these cases had capsule or secondary membrane over the pupil and in three of these it was possible to restore fairly good sight (6/18), and in one other moderate sight (6/60) by needling operations after they had already been admitted to the school as blind. In another case where four needling operations had been performed at the age of 15 and an absolutely clear pupil had been obtained the vision was no better than 5/36, nystagmus being present and the eye partially amblyopic. Besides nystagmus and thick membrane, complications in these cases included microphthalmos, high myopia, cyclitis, and detached retina.

5. *Congenital Cases other than Cataract.*

34 examined: 20 males, 14 females.

Vision—No p.l. ..	2	Vision—6/60	5
p.l.	7	Better	6
Fingers ..	14		

The conditions found were as follows:—

—	Male.	Female.	Total.
Albinism	6	5	11
Dislocated lens with high myopia	2	—	2
Congenital nystagmus without discoverable fundus change ..	7	3	10
Microphthalmos	2	1	3
Aniridia	2	3	5
Macular coloboma	1	1	2
Dense capsular pupillary membrane, complicated with congenital syphilis	—	1	1

In this group, as in the preceding one, the preponderance of male over female cases will be noted. Albinism, as is well known, is a family disease. Out of the six boys in the school blind from this condition there are two pairs of brothers. Practically all of these congenital cases have nystagmus. Ten of them I have put down as congenital nystagmus without discoverable fundus disease sufficient to cause blindness, though in at any rate one of these there were visible choroidal changes. The examination of the macula, however, in these cases is peculiarly difficult. This also applied to cases of aniridia, all of whom had nystagmus. Absence of the iris in itself would not cause blindness, and the presumption is that all cases of albinism aniridia and congenital nystagmus which are severe enough to cause blindness do so on account of some defect in the macula which may or may not be visible to the ophthalmoscope.

6. *Disease.*

37 examined: 25 males, 12 females.

I will subdivide this group. (1) Retinitis pigmentosa, 11 cases of whom all but one were males. This proportion is an exaggeration of that generally found. Nettleship puts the proportion of males in affected families as only about 60 per cent. (Trans. Oph. Soc., 1909). A definite family history was obtained in six of my cases.

Vision—No p.l. ..	1	Vision—6/60	3
p.l.	3	Better	1
Fingers ..	3		

In addition to the bad central vision, the contraction of the fields and the inevitably progressive nature of the disease are such that even those whose central acuity in childhood is fairly good should certainly be educated in a blind school.

(2) Keratitis, iritis, cyclitis, choroiditis, and panophthalmitis. 19 cases, 10 males and 9 females.

Vision—No p.l. ..	6	Vision—6/60	2
p.l.	3	Uncertain	1
Fingers ..	7		

In most of these cases the causation was uncertain. Congenital syphilis may account for some. Measles was the cause assigned in four cases, the blindness having followed the disease at the ages respectively of 2 years, 15 months, 2 years, and 3 years. In one of these cases both eyes were shrunk. In another both had been excised. There was one case of panophthalmitis following scarlet fever at the age of 14 months, and one case of iridocyclitis following influenza. One case of keratitis was due to trichiasis.

(3) Besides the above, the group includes three cases of buphthalmos, one of cerebral blindness without optic atrophy, two of double detached retina, and one in which both eyes had been excised without obtainable history. None of these cases had any vision better than counting fingers.

7. *Accident.*

Eight cases, all males, six of them cases of sympathetic ophthalmia, in none of which was the vision better than counting fingers. The other cases were one in which an accident occurred to the only good eye at the age of 8, the other one having been blinded by cyclitis at the age of 2, the other in which the first eye was blinded by an accident at the age of 7, and the second eye by another accident at the age of 15, both having been excised. These two cases are exceptional, and illustrate the chief value of the possession of two eyes.

8. *Myopia.*

21 cases: 13 males, 8 females.

Vision—No p.l. ..	1	Vision—Better	10
Fingers ..	4	Too young to take vision ..	4
6/60	2		

As a rule these cases are much more suitable for the myope classes such as have been established by the L.C.C. than for the blind school. The great majority of high myopes never become blind, but there are cases where the damage to the macular region has already reached such an extent, even in childhood, and there are others where even without this being obvious the degree of myopia in relation to the age of the child is so high, that it is on the whole wiser, in view of the child's probable future, that he should be brought up in a blind school. Of those whose corrected central acuity was no better than 6/60 five had macular choroiditis and one double detached retina. This last, however, was an adult pupil of 42, and the case illustrates one of the dangers to which these children are liable when they get older. Most of them when young have healthy fundi. Unfortunately in country districts and in most towns there is no "myopic class" available, and the question has to be decided, not what is best for the child but what is second best, an ordinary school or a blind school. It thus happens that pressure is often brought on the authorities of the blind schools to admit children to be trained in a way which is not the ideal one for them.

The Preventive Point of View.

From the point of view of prevention, it is worth while to classify these cases according to their causation in a somewhat more general way. For this purpose I will exclude all those whose vision is better than 6/60 except in the three progressive diseases already referred to. This leaves 213 cases, which I will classify under the following heads.

1. Caused by venereal disease in the parents, 80, of which—

Ophthalmia neonatorum	53
Syphilitic keratitis and choroiditis	19
Syphilitic optic atrophy	8

This is probably an understatement as far as syphilis is concerned. It is probable that some of the cases of optic atrophy of uncertain causation and some of the cases of cyclitis were due to syphilis.

With regard to ophthalmia neonatorum, it may be objected that not all cases of this disease are due to gonorrhœa. This, of course, is perfectly true. According to the report on blindness in Glasgow, published in 1926, and compiled by Drs. Freeland Fergus and J. L. Halliday, the number of cases of ophthalmia neonatorum notified during the years 1912–24 inclusive was 7687. Of these, swabs were taken in 1791 cases, of which only 31·3 per cent. were positive for the gonococcus. On the other hand, the number of those blinded by the disease—i.e., with both eyes blind—out of 3501 non-gonococcal cases was *none*, whereas out of the 1265 gonococcal cases it was six. It may therefore be fairly assumed that when a patient is blinded in both eyes the gonococcus is responsible, and this applies to all the cases at the blind school.

The possibility of prevention lies in (1) the reduction among the general population of the habit of promiscuous sexual intercourse; (2) the prophylactic treatment of ophthalmia of the new-born by means of the more rigid enforcement of notification by midwives, greater facilities for immediate skilled treatment of the disease without loss of time, and possibly the more general use of prophylactic drops of nitrate of silver or some substitute by midwives; (3) the increase of the systematic treatment of venereal disease which has already been established; (4) a wider knowledge among the general population of the facts.

2. Cases caused by congenital and inherited conditions other than syphilis, 66.

Cataract	25	Family choroiditis	2
Other congenital conditions	25	Family optic atrophy ..	3
		Retinitis pigmentosa ..	11

As regards prevention, I cannot help noticing the number of cases of congenital cataract who, in spite of having been operated on, remain blind or partially blind. Most of these cases have more or less capsule obstructing the pupil, but some of them have a good clear pupil and yet they are blind. They practically all have nystagmus, and this points to the reason why even with a good pupil and a convex lens in place of the crystalline which has been removed they still see so badly. Operative treatment is often

undertaken too late, after the period of infancy during which alone it is possible to attain the power of correct central fixation. When once the bad habit of nystagmus has been acquired there is little chance of good vision ever being restored. Undoubtedly for these cases prevention of a certain amount of blindness could be attained if competent ophthalmic treatment was undertaken sufficiently early in life.

3. Cases caused by non-venereal disease other than family and inherited, including optic atrophy not due to these causes and also including myopia, 57.

With regard to prevention, there is little to be said. Myopia which is so malignant as to cause blindness in early life can hardly be prevented. Prevention of blindness in later life by an appropriate régime for youthful myopes is another matter.

Measles as a cause of blindness is emphasised in the Glasgow report, when the percentage, based on the accounts given by the parents, is put down as 2·9. Our cases estimated in the same way come to 5, or 2·3 per cent.

4. *Accident.*—10 cases, including two optic atrophy cases. As to the others, I have been struck with the fact that the air-gun is a most dangerous toy for boys. Accidents, however, do not happen to both eyes at once. In nearly all these cases blindness was due to sympathetic ophthalmia, and as, with timely hospital treatment, this disease is becoming exceedingly rare, we may hope that in the future these cases may almost be reduced to nil.

Reducing these causes of blindness to percentages we get—

Venereal disease	80	or 37·6	per cent.
Inherited and family disease	66	,, 31·0	,,
Non-inherited and non-venereal disease	57	,, 26·7	,,
Accident	10	,, 4·7	,,

Clinical and Laboratory Notes.

A CASE OF
COR TRILOCULARE BIATRIA.

BY EDITH F. W. MCCREA, M.B. DUB., F.R.C.S.IREL.,
PHYSICIAN TO THE MANCHESTER BABIES' HOSPITAL.

THE following instance of cardiac malformation appears worthy of record.

A female infant, aged ten weeks, was admitted to hospital on Jan. 28th, 1926, with a history of dyspepsia. She was the only child of her parents, and was born at full time; there was no family history of importance.

On admission she was a very small, wasted child, weighing 5 lb. 8 oz.; cyanosis was marked and there was a loud systolic murmur, audible all over the præcordia and propagated into the left axillary and scapular regions. The Wassermann and von Pirquet reactions were negative.

The infant suffered from a mild form of chronic dyspepsia, but the clinical picture was primarily that of a cardiac lesion. The cyanosis varied in degree from time to time, but was always present; the appetite was poor and the child was extremely listless. For six weeks her general condition did not materially alter; then a rapid deterioration developed and death occurred within a few days.

Post-mortem examination revealed an interesting condition of the heart. On opening the pericardium the heart appeared at first glance to be normal in size and appearance. But on tracing the vessel, which seemed from its site of origin to be the pulmonary artery, it proved to be the aorta, which gave off its usual branches. Lying posteriorly to this vessel in the normal position of the aorta was the pulmonary artery, the diameter of which was about one-third that of the aorta.

The ductus arteriosus was not patent; the right and left atria were normal, except for the presence of a patent foramen ovale, and the atrioventricular valves appeared to be normal and competent. A single ventricle was present, from which both aorta and pulmonary artery originated. The interventricular septum was deficient and no portion of it could be identified, although two large fleshy bands partially subdivided the cavity. The aortic orifice lay at the site usually occupied by that of the pulmonary artery, while the latter vessel with its thin walls lay posteriorly and to the left in the normal position of the aorta; each orifice possessed three semilunar valves.

The principal defect in this heart was apparently a total deficiency of the interventricular septum, together with malformation of the proximal bulbar septum which resulted in transposition of the great vessels. In Vierordt's classification, quoted by Abbott in Osler and McCrae's "System of Medicine" (vol. iv., p. 370), this case would be grouped under the heading of "Cor Triloculare Biatria" with "partial transposition, in which both great vessels arise transposed from a common ventricle."

I reported another example of cor triloculare biatria in 1923[1] in an infant aged 3 months. This heart apparently resembled those quoted by Holmes (see Abbott), and also one described by Keith, in that an anomalous septum was present; there was, however, no transposition of the great vessels. True cor triloculare biatria is stated to be an extremely rare condition, but I have seen two cases within three years.

I am indebted to Dr. Florence Robinson for permission to publish this case.

A CASE OF
SQUAMOUS-CELLED EPITHELIOMA OF THE BRONCHUS
ILLUSTRATING LYMPHATIC PERMEATION.

BY D. M. BADEN EVANS, M.B., M.R.C.P. LOND.,
RESIDENT MEDICAL OFFICER, BOLINGBROKE HOSPITAL.

THE following case of epithelioma of the right bronchus is of interest in view of the widespread metastases, unusual in this type of tumour, the clearly defined mode of spread, and the deceptive nature of its clinical harbinger; also on account of the squamous type of cell seen in a tumour arising from a tube, normally lined by columnar epithelium.

The patient, a feebly nourished man of 54, came up complaining of a "boil" on the right side of the back. On inspection the tumour was of the size and shape of a split walnut, situated opposite the second dorsal spine. It had been incised three weeks previously, but had failed to heal. The mass was indurated and fungating, and hard glands were palpable in both axillæ and supraclavicular areas. There was also a small enlargement of the lower end of the left ulna.

Examination of the chest revealed râles and rhonchi all over, which was consistent with a history of several years of chronic bronchitis. But a little exaggerated dullness over the root of the right lung prompted the taking of an X ray photograph; and this strongly suggested the presence of a new growth.

The tumour on the back was excised under local anæsthesia and was found to have no deep attachments whatsoever. A gland from each axilla was also removed for section. All three were shown to be involved by squamous-celled epithelioma. There was no keratinisation however, and the cell-nests of cutaneous tumours were absent. Three weeks later the patient's "bronchitis" became worse; expectoration became profuse, and later hæmorrhagic; the temperature remitted between 100° and 103° F.; and cyanosis with œdema of the neck and face developed. In five days the patient died.

Autopsy revealed a large growth of the right bronchus, firmly adherent to the spinal column, from which it could be separated only with the scalpel. There were secondaries in the mediastinal glands, the cœliac glands, the glands along the curvatures of the stomach; there was one small growth in the liver, and one in the periosteum at the lower end of the left ulna. From its size, age, and involvement of surrounding structures the primary growth was obviously in the right bronchus. The squamous type of cell must have evolved from the columnar by a process of metaplasia, consequent on prolonged inflammatory irritation. There were elsewhere abundant evidences of chronic bronchitis and bronchiectasis with atrophy of the lining of the respiratory tubes and thickening around.

Sections were made from all the secondary deposits which were found to be involved by the same type of

[1] Willock: THE LANCET, 1923, ii., 1399.

growth. Their situation admirably illustrates the centrifugal manner of spread by the lymphatics: (*a*) To the back along the lymphatics accompanying the dorsal branches of the intercostal vessels. (*b*) Forwards to the mediastinal glands. (*c*) Upwards in along the thoracic duct, and tributaries of the right lymphatic duct, to the supraclavicular glands; and thence to the axillary glands. (*d*) Downwards, along the thoracic duct to the cœliac glands and those of the stomach.

The small deposits in the liver and ulnar periosteum were probably the result of spread by the blood stream from emboli entering by the large lymph trunks. If the metastasis in the ulna were due to permeation from the axilla, it would have to be assumed that perilymphatic fibrosis had prevailed in the interspace.

My thanks are due to Mr. V. Zachary Cope for permission to publish this case.

A NOTE ON GIDDINESS IN NEURASTHENIA.

BY HECTOR M. WALKER, M.D. GLASG.

VERTIGO is a symptom commonly met with in practice, and it is usually very persistent and difficult to deal with. It may arise in many and varying conditions, and a difficulty that it presents is that it is rarely easy to come to a clear understanding of what the patient means by giddiness. The giddiness complained of by the neurasthenic appears to be mainly an uncertainty of himself in relation to his surroundings and a feeling that he may fall at any time. The so-called gastric vertigo is usually of the same nature, but there is often a more definite feeling of subjective or objective movement than in the neurotic type.

Vertigo in a Boy Relieved by Irrigation of the Meatus.

Irrigation of the external meatus of the ear with hot or cold water normally produces a certain train of events, evidenced by vertigo, a tendency to fall to one side, nystagmus, and past-pointing. The vertigo, nystagmus, past-pointing, and falling occur in a definite direction, and the direction differs when hot water is used from that when cold is used, and the response from the left ear is in the opposite direction to that of the right. This reaction was described by Bárány, and it occurred to me to use it to gain some information on the symptom of vertigo in cases in which I had been unable to find an organic cause.

A boy of 11 years had suffered for eight months from very severe headaches of a migrainous type coming on at intervals of two to three weeks. The headache was always ushered by a subjective sense of giddiness which would last for 10–15 minutes and was invariably followed by a headache lasting for several hours. The vertigo was not associated with nystagmus, past-pointing, or a staggering gait; the face turned pale but he did not vomit. The absence of these objective signs suggested that there was no disease of the labyrinths.

At one time when I happened to see him at the beginning of an attack I decided to test the vestibular reaction, and also to see what the effect of a powerful physiological stimulus to vertigo would be. I therefore syringed his left ear with cold water and immediately he developed a very marked nystagmus, felt extremely giddy, and vomited. The pallor gave way to a flush on the cheeks. In about a minute the vertigo left him and the headache which always followed the vertigo did not develop.

The disturbance in this case evidently started with an aberrant flow of neural energy in the vestibular nucleus, giving rise to the sense of vertigo, through the cerebellar connexions of the nucleus. The headache which followed the vertigo was probably originated by an overflow into the adjacent trigeminal nucleus, the outlet through the trigeminal nucleus being an easier path, as it is one normally concerned with somatic sensation. By giving a stimulus sufficiently powerful to overcome the aberrant flow and to act as a prepotent stimulus, a normal reaction is provoked, with a normal outlet preventing overflow into the trigeminal nucleus.

Five Similar Cases.

Five other cases were of neurasthenics, who complained of giddiness. This giddiness, so far as I could make out, consisted of an uncertainty of themselves in relation to their surroundings, and a feeling that they might fall at any time if they did not use every means to keep a strict hold on themselves. I had the idea that this symptom was due in part to a deficient action of the proprioceptive system through the state of nervous exhaustion, and I decided to try the effect of vestibular stimulation.

In a man of 36, who complained of persistent giddiness, the reaction was delayed for two minutes. The vertigo was not very severe, and the reaction was normal in direction, but the nystagmus was rather sluggish.

The second patient was an intelligent man of 35. I placed him in a chair facing an open window and irrigated his ear with cold water. This quickly produced a normal reaction with very marked vertigo and nystagmus. He said that he felt much better after this and that he felt more confidence on his way home than he had had for six months. I repeated the process twice and the condition cleared up completely. A year later he returned with the request to have it done again as he was beginning to have a return of the giddiness, and after one irrigation he said that it had gone.

The influence of the vertigo stimulus probably acted partly by re-establishing his confidence when he saw what real vertigo meant. The principal effect, I think, depended upon the replacement of the aberrant flow of neural energy in the nucleus by a prepotent stimulus which took a normal path.

The next case, that of a man of 30, was of special interest, for although the giddiness disappeared after two irrigations which gave a normal reaction, it was replaced by a headache strictly limited to the right side—the side that I had irrigated. For five weeks he had occasional headaches, but they cleared up as his general condition improved. The powerful stimulus caused a normal flow of neural energy in the vestibular nucleus, and the aberrant excitation, instead of being overcome as in the case of the boy, was here directed into the trigeminal nucleus. The stimulus which, affecting the vestibular nucleus will cause vertigo, in the trigeminal nucleus may cause headache, and in the vagal nucleus may cause vomiting. The gastric vertigo is probably a reversal of this process, the stimulation referred back to the vagus nucleus overflowing into the vestibular nucleus. The headache sometimes associated with this disturbance may be a like involvement of the trigeminal nucleus.

The condition of the other two patients was also improved by the stimulation, although one, who had complained of giddiness for nine months, required irrigation six times at intervals of five days. He also returned some months later with a request to have the treatment repeated.

The vestibular nucleus and the cerebellum, which is really in phylogeny an outgrowth and development of the part of the vestibular system known, in fishes, as the acustico-lateral area, are the head ganglia of the proprioceptive system. It is easy to understand that even a slight functional disorder of this system, which normally acts automatically, will call into action a continual slight activity of a conscious element for postural control through the cortico-spinal tracts. This must necessarily absorb a considerable amount of nervous energy, and it is not surprising that such cases have marked symptoms of neurasthenia which resist treatment.

I believe that this method throws some light upon a certain type of giddiness, although it is obvious that in these cases there is not a true vertigo. The few cases that I have examined were carefully selected, as it was this particular symptom, occurring in neurasthenia, that I wished to study.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY.

A MEETING of this Subsection was held on May 11th, Mr. J. P. LOCKHART-MUMMERY, the President, in the chair.

Mr. W. E. MILES opened a discussion on

COLOSTOMY.

He began by describing the lumbar colostomy of preantiseptic days, when the surgeons were afraid to approach the bowel intraperitoneally. The chief defect of this measure was that the stoma in the colon was lateral and did not stop the passage of fæces beyond it. It had one virtue—protrusion of the mucosa never occurred. Now that resection with anastomosis could be performed, the operation of colostomy was needed only for inoperable carcinoma of the rectum or pelvic colon; lumbar colostomy had been gradually superseded by sigmoidostomy. At first this was made a little above the left Poupart's ligament and at about the middle of the pelvic loop, and an opening was made in the parietes large enough to put the hand in for investigation. The result was that the spur receded so that the opening became a lateral one with all the defects of the lumbar colostomy combined with considerable protrusion. Later, Mr. Harrison Cripps had pointed out that protrusion could be prevented by making the opening high up in the pelvic colon. Much controversy had followed; the advocates of the low opening said that it was necessary to preserve a natural reservoir which more or less controlled defæcation. They forgot that, whereas Nature provided a loop for control, she had also provided an efficient lock in the form of the sphincter. Mr. Miles had no doubt that Harrison Cripps was right about the site of election. The essential feature of a colostomy should be that it effectively prevented the contents of the bowel from passing beyond the stoma into the loop below. For this the permanence of the spur was essential. If the mesentery were short, congenitally or as a result of carcinomatous infiltration, it was impossible to deliver a loop long enough to make a good spur, and directly the rod was removed the spur would recede on the slightest tension from within.

Some had thought that peristalsis had something to do with recession of the spur and had therefore divided the bowel completely, making a terminal colostomy. In cases for which colostomy was now performed, however, the distal portion could not be occluded because of discharges from the growth. Mr. Miles's objection to this device was that division of the bowel created a weak spot between the two openings and sometimes large hernial sacs appeared between them. Another modification was to make the colostomy opening through the outer border of the rectus muscle. This gave good support but could only be done where there was sufficient length of loop of the pelvic colon. It did not, in fact, matter what method was adopted so long as the colostomy was effective.

Indications.

Cæcostomy was a lateral opening, a temporary measure only, for evacuation, washing out, or forming a safety-valve. Transverse colostomy was a substitute for sigmoidostomy when the latter was impossible. The indications were carcinoma of the rectum or lower sigmoid, to give rest in inflammatory conditions, such as diverticulitis, to overcome obstruction in cases of compression from without, for congenital defects, and for relief of fistulæ or of irremediable incontinence after operations for fistula. Mr. Miles did the operation one-third along the line from the anterior superior spine to the umbilicus, and he chose that part of the pelvic colon which was best and not where chance dictated. Most of the patients were elderly with some visceroptosis, and the colon was usually bound down by altered peritoneal attachments, so the abdomen should be opened down the middle line and the gut mobilised if necessary. A stab incision was then made in the parietes and a circle of skin of about 1 inch in diameter removed so that when the bowel was extruded it adhered to the aponeurosis of the external oblique, thus preventing recession. A ligature was then introduced through the mesentery, passing first close to the proximal end and then to the distal, to anchor it to the skin. A loop of silkworm-gut was drawn tightly enough to obstruct venous return, but not arterial flow, so that a solid œdema was produced in the spur, which looked like a tomato and was shaped like a mushroom. The spur so produced was durable; he had recently seen a case done in 1903. Much depended on careful after-treatment, daily washing out of the bowel, and the use of a cap as a protector; a bag was the worst possible thing, as it produced a negative pressure which led to protrusion.

Mr. W. B. GABRIEL said that a permanent colostomy was now regarded as an essential part of the operation for carcinoma recti, and it could be one of the most satisfactory operations in surgery. It must not be regarded as a crippling process; patients were able to take part in their usual social lives and pursuits as before. His remarks would deal with colostomy of the pelvic colon with the bowel in continuity, and the indications for this measure were: 1. Carcinoma of the rectum, whether operable or inoperable. Nearly every case benefited if the operation were done in good time; failure might be due to faulty technique or inability of the patient to adapt to the new conditions. 2. Fibrous stricture too extensive or too high for dilatation. 3. Diverticulitis, causing obstruction or vesico-colic fistula. 4. Acute spreading ulceration—a very rare indication. 5. Recent injuries of the rectum, such as gunshot wounds, where it was a useful adjunct to local drainage, and older injuries where extensive plastic operations were required. 6. Compression by extrarectal tumours, such as pelvic sarcoma and chondroma or, more commonly, carcinoma of the cervix uteri.

The Rectus Incision.

Mr. Gabriel's technique, and that commonly followed at St. Mark's Hospital, began with a vertical incision 1½ inches long to the left of the midline, splitting the fibres of the rectus abdominis. The advantages of this method were that a general exploration could easily be done, that it was less likely to produce ventral hernia, and that the transverse colon was available if required. He had tried fancy incisions, such as those designed to give a bridge of skin between the stomata, and had found no advantage in them. A glass rod was better for fixing the bowel than a stitch, which was liable to cut out. It should be passed through the mesentery ½ inch to 1 inch from the edge of the bowel and must be left in for 14 days at least. Nothing but catgut was used for the abdominal wall, and all sutures were interrupted. Tension sutures were put through the skin and anterior sheath. The difficulty of bringing the bowel to the surface was generally met by thorough division of adhesions.

Complications and Their Prevention.

He quoted figures from St. Mark's Hospital where, out of 259 colostomies for inoperable carcinoma of the rectum, the immediate mortality had been 13·5 per cent., 20 cases having died of heart failure, exhaustion, or pulmonary complications, four of peritonitis, one from strangulation of a loop of small intestine between the colostomy and the abdominal wall, one each from renal failure, coma, and hæmorrhage from the proximal end, while four more remained distended without obvious reason. Later complications were stenosis, always at skin-level; retraction of the spur, which must be actively treated by dissecting out and refixing; proximal or distal prolapse due to too large

an opening in the parietes. This should be prevented by getting the opening snug round the extruded gut; when established it was best treated by a belt. Another late complication was ventral hernia, which no technique could entirely exclude, but the left rectus operation gave better results than the left oblique, and the use of large cups certainly encouraged herniæ. Yet another complication was the extension of the cancer to the abdominal wall, owing to a colostomy being made too close to the primary growth. If there were not enough loop a transverse colostomy should be done. The intestine should not be opened until 48 hours after operation, and with turpentine enemata and paraffin the opening could sometimes be postponed for 7 to 12 days with great advantage. The opening should be done with a Paquelin cautery. If there was redundant bowel outside it should be trimmed after the fourteenth day under local anæsthesia. The daily routine should be a wash-out with 1 to 2 pints of soapy water passed in from a funnel through a rectal tube into the proximal opening; the distal loop should be washed through to the anus if carcinoma were present. Patients did very well; they had no sepsis and no irregular actions. No cup was needed; the only dressing was a thin piece of cotton-wool, a flat celluloid plate, and a simple corset. Patients had to avoid green vegetables, currants, raisins, and sometimes beer and stout, but they had to experiment for themselves and find out what caused diarrhœa.

Discussion.

Sir C. GORDON-WATSON said it was time somebody put it on record that colostomy was not the dreadful operation it was supposed to be by the profession and the public. If a carcinoma of the rectum was inoperable he always advised colostomy, whatever the condition. The patient was more comfortable and healthier after it, and lived longer. A proper colostomy properly performed and properly managed was one of the most satisfactory operations of surgery, and after it patients could carry out their work in any walk of life. He instanced the driver of a locomotive on the Great Western Railway. He believed in a rectus incision close to the umbilicus, and not far from the midline. A very important point was to push aside the intercostal nerves, as paralysis of the rectus meant bulging and prolapse. He sutured the posterior to the anterior sheath as soon as he had split the muscle, for this limited any bleeding from the deep epigastric vessels or any sepsis that might occur. It also prevented the bowel from coming into contact with the muscle where poor adhesion was formed. He was a great believer in the glass rod, left in for at least three weeks. He thought it a mistake to divide the continuity of the bowel, to suture the skin across through the mesentery, or to suture the bowel to the parietes. No bag or cup and in most cases no disc was necessary. He had seen two cases of hæmorrhage into the mesentery due to passing the rod under the bowel without mobilising.

Mr. R. P. ROWLANDS agreed that public and professional fears of the operation were unjustified; it prevented suffering and prolonged many lives. He never brought the colon out through the exploratory incision, but made a separate stab incision. He preferred the high left inguinal or iliac site. When a glass rod was not available, a rubber-covered arterial forceps holding a swab could be used. Each suture could be tied to the end of an appendix epiploica to prevent the colon coming further out. The deep part of the stab wound was what should be small, rather than the skin orifice. Mr. Rowlands illustrated some points in his technique by slides.

Mr. L. NORBURY emphasised the need of educating the profession and public, and quoted the case of a man with a colostomy who bicycled from Bedford to London a year after his operation. Stout seemed a very bad article of diet, producing diarrhœa, but often beer did not. He used a subumbilical incision through the left rectus, as he thought it gave better control than the inguinal site, and that it even gave some hold over the passage of flatus. He mentioned some interesting complications he had met: retrograde intussusception of the lower end with gangrene; contraction of the opening with formation of a very tight fibrous ring, producing obstruction; coexisting diverticula which might rupture as the loop of bowel was being delivered; and very extensive prolapse of both ends.

Mr. SWINFORD EDWARDS recalled lumbar colostomies he had seen. He did not think enough stress had been laid on conferring control after the operation; he had never done an inguinal colostomy again after trying the rectus incision, because the latter did confer a considerable amount of control. He wished to stress also the deep silkworm suture through the aponeurosis, through the muscle if need be, and through the mesentery on both sides, so that four peritoneal surfaces were brought into adhesion. This prevented a certain amount of prolapse, especially prolapse of the small intestine, and bisected the wound. He had always been against cups of all kinds.

Mr. TURNER WARWICK said that the chief factor in preventing prolapse was the posterior rectus sheath; the opening in it should be just large enough to admit the finger. He had had no ill-effects from carrying the suture through the bowel wall.

The PRESIDENT mentioned the difficulty of operating on very fat patients; he had found that the way to deal with them was to take the surface down to the colostomy and not try to bring the colostomy up to the surface. He had removed pieces of fat as large as 8 inches in diameter. He believed strongly in the rectus incision, which gave an astonishing amount of control. Most of his patients only washed out if a normal motion did not occur. He never put stitches in the peritoneum, but sewed the anterior rectus sheath to the edge of the bowel.

Mr. A. LAWRENCE ABEL said he had been impressed by the good results of Mr. Miles's method. He regarded a preliminary laparotomy as essential. If the bowel were opened transversely there was no hæmorrhage or contraction. In the left iliac fossa there were three muscles, each of which contracted, thus giving triple control; also the bowel was more easily brought to the surface there, and so a rod was unnecessary. He put in a word for the peritoneal stitch.

Mr. W. S. PERRIN said that when he had given up the peritoneal suture he had had a case of huge prolapse. He had tried both, and could not see much difference between the rectus and iliac incisions.

Mr. D. C. L. FITZWILLIAMS regarded an exploration of the liver as important; the colostomy was then done in the wound already made. He used a Paul's tube in obstruction cases, so that lateral wash-outs could be performed. He never put stitches through the bowel wall; the appendices epiploicæ were better.

Mr. E. T. C. MILLIGAN mentioned the plight of two men with no fixed abode who were turned out of hospital with colostomies and committed suicide after a few weeks of lodging-house life. Any removable carcinoma of the rectum should be removed, whether there were metastases in the liver or not; there was no need for an exploratory operation. He used the rectus incision, but had seen herniæ follow it, and the deep epigastric artery might be an embarrassment and source of hæmorrhage. Some patients had great difficulty in getting control, and he thought it important to impress on the doctor that the bowels must be kept constipated, and to order wash-outs.

Mr. MILES, in reply, repeated his axiom that it did not matter what method were used provided the colostomy were effective. It was a great mistake to delay it in cases of carcinoma; every day of delay was a day to the bad. His objections to the rectus method were that it required considerable length of colon and produced a transverse fold within the radial range of the small intestine.

ROYAL SOCIETY OF MEDICINE: CLINICAL SECTION.

A MEETING of this Section was held on May 13th, Sir HERBERT WATERHOUSE, the President, in the chair.

Mr. PHILIP TURNER showed a case of

Gumma of Liver.

The patient was a man, aged 34, who had been admitted to hospital suffering acute abdominal pain. He was said to have had right iliac and hypogastric pain for six years, particularly after taking food. On the day of admission the symptom was specially acute, with rigidity of the upper abdomen and marked tenderness, and the condition was attributed to perforated gastric ulcer. Yet both temperature and pulse-rate were normal.

Mr. Turner explained that he divided acute abdominal cases into (1) emergencies—i.e., those demanding immediate or very early operation, and (2) urgencies, those needing attention without delay. The present case he had placed in the second category.

In 24 hours the tenderness had become much less, and the pulse-rate had not risen, while the rigidity had passed off. There was a large tumour in the epigastric region and it was resonant. Regarding it as a leaking gastric ulcer with a localised abscess, he operated four days after admission; he found a tumour the size of a fist in the left lobe of the liver, close to the midline, and a similar lump on the right side near the neck of the gall-bladder. A portion removed was gummatous. Then the man had admitted he had had syphilis ten years ago, and his Wassermann was found to be strongly positive. Injections of novarsenobenzol had already reduced the lump to half its former size.

Mr. Turner thought the acuteness of the symptoms must have been due to perihepatitis. Resonance had often proved a deceptive abdominal sign. The lower part of the abdomen was normal.

Mr. Turner also showed a case of

Fractured Patella Wired in 1889.

A woman, aged 60, was admitted for a painful hammer-toe, which was treated surgically. A scar about the knee of the opposite side was noticed, and the patient said that Sir Henry House had wired her patella in 1889. The notes of that date showed that three months before her admission she fell and fractured the left patella, and it was put into splints for six weeks. Then suddenly it broke again, and Sir Henry House operated under carbolic spray, and kept the limb immobile for seven weeks.

A skiagram, said Mr. Turner, showed the wire still in position; there was perfect bony union, with no more arthritis on this side than on the other, and no more than was usual at her age. The function of the knee was perfect.

Dr. C. F. EAST showed a woman, aged 34, with

Facial Hemiatrophy and Persistent Hiccup.

The hemiatrophy had began at 14 years of age, and there were now well-marked changes in all the tissues on the right side of the face and head. That side of the tongue was also small and the opening of Stenson's duct could not be seen. The duration of the hiccup was about 13 years; it was provoked by emotion and exertion, and he regarded it as a form of tic. She had considerable periods of freedom from hiccup and the breathing exercises she had been having seemed to have given benefit.

Dr. L. S. BURRELL suggested that if the condition was unilateral some good might be done by paralysing the controlling nerve.—Dr. PARKES WEBER said he considered that if this was a real tic no operation should be attempted, especially as improvement was being effected by the breathing exercises.—Mr. E. G. SLESINGER disagreed with Dr. Weber's implication that because a lesion was functional, not organic, it should not be treated by surgery. The object of any treatment, whether medical or surgical, was to get the patient well in the shortest time.

Dr. EAST, in reply, said that in a similar case Magnus had found interstitial neuritis of the trigeminal ganglion and of the nerve on the same side of the face.

Mr. SLESINGER showed a man, aged 32, with

Arteriovenous Aneurysm.

The patient received a bullet wound in the right shoulder in 1918, and in the following year Mr. Slesinger saw him because of an arteriovenous aneurysm of the right subclavian. The only complaint he had—and this his wife shared—was that the noise of the aneurysm kept them awake at night. Latterly, however, there had been attacks of pain over the heart and shortness of breath. Skiagrams showed the bullet in the cardiac muscle, probably in front of the intraventricular septum. There was no disability in either arm or hand. He told the man he would remove the bullet if it seemed to be moving or interfering with conductivity. Being embedded in a continually contracting organ he thought it would be sure to move.

Dr. C. WORSTER-DROUGHT brought a man, aged 40, with

Spastic Paresis of One Leg.

The complaint was of difficulty in walking owing to weakness of the right leg. The right leg was found to be somewhat spastic, with slight general muscular atrophy and weakness. Sensation and coördination were normal. Nothing unusual appeared in a skiagram of the spine. The Wassermann reaction in both blood and cerebro-spinal fluid was negative, and the latter fluid appeared normal. There was no history of a previous infecting condition. The illness came on like an ordinary spinal myalgia.

Dr. DAVID KRESTIN showed a man, aged 49, who had an

Aneurysm of the Innominate Artery,

which later disappeared.

Until seven months before he came under observation in February, 1926, he had been in good health. Then he began to get great pain in the back of the head and the neck. Four months later this improved, but he had a similar pain in the right shoulder and axilla, and the upper part of the anterior chest wall on the right side and the right arm seemed swollen. Six weeks later a swelling the size of a damson appeared just above the right clavicle. At this time he lost his voice and became breathless; he also began to cough. A week before admission to hospital the swelling rapidly increased and became painful. He had gonorrhœa 20 years ago, also what was said to be a soft chancre, which was cauterised. His present inspiratory stridor was well heard. The swelling at the lower end of the sternomastoid was the size of a tennis ball and showed expansile pulsation. The second aortic sound was accentuated. The man refused any form of treatment and left hospital. Within three months of leaving the swelling entirely disappeared, the general condition improved, and he had since remained at work, without having had any treatment. Nothing could now be felt except an indefinite thickening at the root of the neck, the voice was normal, and both cords moved well. A radiogram of the chest showed dilatation of the ascending arch of the aorta, extending to the innominate artery. The Wassermann reaction was strongly positive, and there was no history of trauma.

Dr. Krestin suggested that a somewhat acute process had occurred in the wall of the vessel, that blood had exuded into its sheath, so causing a false aneurysm, and that most of the blood had subsequently been absorbed, the remainder, after clotting, becoming organised.

Dr. V. S. HODSON said that he had seen a case of aneurysm of the ascending arch of the aorta which seemed likely to burst. Following large doses of iodide there was a distinct reduction in the size of the swelling, and in a few days all signs of it had disappeared.

Mr. ST. J. D. BUXTON showed a case of

Exophthalmos Cured by Ligation of the Carotid.

The patient was a woman, aged 49, who developed exophthalmos after a street accident. A month after the injury she had diplopia, for which glasses were supplied. Three months later the left eye was proptosed and was slightly pulsating, and the conjunctiva was œdematous. With the stethoscope a loud murmur was heard above the orbit, especially over the frontal sinus; this sound ceased when pressure was applied to the common carotid artery. Mr. Buxton operated last February, and ligated the left common carotid artery. After this the proptosis gradually subsided, and ocular movements and vision became normal. The patient now had no complaint.

The PRESIDENT congratulated Mr. Buxton on the brilliant result. The safety or otherwise of ligature of the carotids depended greatly on the condition of the arterial wall. In young people there need be no anxiety, but in old persons it was a serious matter.—Mr. SLESINGER remarked on the uncertainty of the ultimate prognosis in these cases.

Mr. BUXTON replied that Mr. Slesinger's remarks applied to exophthalmos following a bullet wound, rather than to exophthalmos resulting from a small fracture of the base of the skull.

Dr. HODSON showed a case of

Amœbic Hepatic Abscess.

The patient was a man, aged 39, who, in June, 1926, had dysentery in India and was successfully treated with emetine. He returned to England late in the year, felt ill in January last, and slowly got worse. When seen by Dr. Hodson on April 1st he had the typical condition of amœbic abscess, and the right side of the chest showed limited movement and a slight prominence over the liver. Hepatic dullness began in front of the fourth intercostal space in the nipple line. Skiagraphy showed a definite upward enlargement of the right lobe of the liver, with fixation of the diaphragm. He prescribed for the patient gr. 1 of emetine daily for three days, and told him to return in a week. When he did so he said riding in an omnibus no longer caused him pain, and that he was able to do his work in increasing comfort. A few more days of emetine treatment, of similar dosage, were followed by diminution of the protuberance of the right lobe and some diaphragm movement. Some days later he only complained of a feeling of tightness over the liver. Nine days' treatment brought about complete recovery.

Dr. Hodson said the case, like a number of others, showed that there was now no need to deal with this condition surgically. This condition was not strictly speaking an abscess, but was more comparable to a gumma. He believed that too large doses were given for this condition. The only cases of mixed infection he had seen were those in which contamination of the wound had followed aspiration. He had had five previous cases of the kind in which the results had been similar.

Other Cases.

Dr. PARKES WEBER showed a case of Pituitary Tumour.

The patient, a man aged 47, had a pale cachectic appearance, with moderate anæmia, chronic headache, hemianopia (bilateral), and apparently an enlargement of the pituitary fossa. The Wassermann reaction was negative. His hair was scanty, he had none in the axillæ. He was the father of four healthy living children. During the last year he had been sexually impotent. Some improvement had followed, brought about, Dr. Weber suggested, by leakage of a pituitary cyst into the cerebro-spinal fluid.

Dr. WEBER also exhibited a man, aged 36, whose complaint was that of general weakness, and whose condition he diagnosed as abdominal lymphogranulomatosis maligna. There was, he said, a very high degree of eosinophilia. In the abdomen, to the left of the umbilicus, was a deep, hard, immovable swelling, but there was no sign of hydatid disease. Apparently the spleen was enlarged. The fæces contained occult blood.

Mr. C. LAMBRINUDI showed a girl, aged 16, and asked for help in the diagnosis of her condition.

At 2½ years of age she fell down stairs, and afterwards developed diarrhœa and vomiting, and pain in the back and neck. Lumbar puncture was negative. Her gait was very awkward, the knees and hips were somewhat flexed, and the back markedly lordosed; the knee-jerks were absent. The extensors of the knees, the psoas, and adductors of the thighs were paralysed on both sides, and there was some contracture of knees and hips. Both glutei maximi were much enlarged.

He asked whether this was anterior poliomyelitis, or an unusual case of pseudohypertrophic muscular dystrophy. He believed it to be the latter.

Dr. WEBER thought the patient had had infantile paralysis, though she might now be developing a primary muscular dystrophy. It was suggested that underlying these conditions there was a weakness in the central nervous system.

Reviews and Notices of Books.

THE PSYCHOLOGY OF MURDER.

A Study in Criminal Psychology. By ANDREAS BJERRE. Translated from the Swedish by E. CLASSEN. London: Longmans, Green and Co. 1927. Pp. 164. 9*s*.

THIS book consists of three essays and an explanatory foreword, and constitutes, we are told, the first of a series of contributions to the subject; but as the author, who was professor of criminal law at the University of Dorpat, died young some 15 months ago, the sequels must be projected from other pens. Mr. Birger Ekeberg, formerly Minister of Justice in Sweden, in a brief preface prepares us for the close analysis of the psychic life of criminals which Bjerre is able to supply, and testifies to his devotion throughout many years of his life to the study of Swedish prisoners in order by constant personal association to solve the riddles in their dark lives. And certainly the three careers are dark enough which Bjerre supplies in illustration of the general propositions which he thinks to be warranted by his experience.

In Bjerre's view, detailed investigation of the lives of particular offenders is much required, existing estimates of the character of homicidal criminals being too much based upon predetermined theses. He recognises that some classification, according to common characteristics, must be the essence of scientific research, but finds that many widely accepted generalisations with regard to murderers are incorrect, because it has not been sufficiently recognised that there is with them a real inability to conform to ordinary type, so that deductions from their actions, based upon deductions from the actions of the mass, are likely to be faulty. His contribution to classification takes the shape of a great generalisation—namely, that *weakness* (italicised by Bjerre) on the part of the criminal lies at the root of most murder crimes. He does not profess to be satisfied with the theory as being complete; it formed in his mind against his will, and as a result of deeper intercourse with criminals he became fortified in the view. And in what he means by *weakness* lies the originality of his ideas.

The defect of *weakness* he divides into three classes as there is produced by it (1) "self-deception," (2) "anguished fear," and (3) "shamming"; and the conduct of the particular criminals whose offences he details illustrates the three defects.

The first, a hanger-on of brothels from the age of 15, requiring money to supplement his wages and his earnings as a *souteneur*, embezzled and departed with an associate, who had influenced him with stories of the wealth of great cities, on a rambling tour through Europe. They remained at large for some months, spending the results of the crime until they were swindled by a theatrical adventurer, apparently a sexual pervert, and found themselves back in Sweden penniless. They then murdered a postman on an elaborate but clumsy plan and were arrested. The sentence of imprisonment for life gave Bjerre the opportunity of exhaustive analysis, and the reasons for classification of the case as typical of self-deception emerge. The murderer had persuaded himself that the victim, whom it was only intended to stun, must carry at least 40,000 crowns, which society owed to his assailants, whose difficult position as penniless outlaws justified their action.

The career of the second murderer explains what the author means by "anguished fear." Among these criminals a consciousness is engendered that something has been radically wrong in their lives from the beginning, leading them to a consciousness that definite individual effort from them will be useless. The desire to conceal from the public actions which are esteemed reprehensible becomes coupled with a horror of all responsibility. The murderer in whom *weakness* took this shape first attempted to poison his fiancée who was enciente by him, and later murdered her immediately after intercourse. The

impulse to kill is attributed by Bjerre to a boundless hate having sprung up in the murderer when he found that he would be compelled to take public responsibility for their conduct, especially was he anxious not to be discredited in the eyes of certain rich old peasant families, and above all in those of his mother under whose complete domination he had always lived. The abnormal affinities between such criminals and their mothers is made the subject of very interesting comments.

The murderer whose crime is described as an example of "shamming" is a more loathsome person than the others, if possible; he is given as an example of one who strove, even with enthusiasm, to observe in every detail all that he could comprehend of the rules and laws of life, and tried to convince himself that he had discharged the duties thus laid upon him, although he lived incestuously with three of his daughters and killed, whether in an assault that proved fatal or by deliberate murder, his wife. He also committed arson. His form of "shamming"—and it is hard to see why he does not fall under the first heading of "self-deception"—seems to be that he justified the pretence to good citizenship because he worked hard on his farm. He never thought of burning his property down until economic pressure drove him to do so, while he never thought of killing his wife until it appeared that her evidence might convict him of arson. It is hard to credit the narrative, but we are told that the criminal did not believe that the abuse of his daughters was illegal, and justified it on the double grounds of economy and convenience.

The book in translation reads easily, and the close investigation and real insight that have gone to its making are apparent. Every opportunity that is taken for such psychological studies must supply material for public instruction on the difficult problems associated with crime and its apposite punishment on social grounds. Many admirable people, whose kindness of heart all respect, would benefit by reading Bjerre's commentary on the charitable proverb "tout comprendre c'est tout pardonner." He finds it a mischievous adage.

SERUM SICKNESS.

Les Accidents Sériques. By R. J. WEISSENBACH and GILBERT DREYFUS. Paris: Gaston Doin et Cie. 1927. Pp. 160. Fr.15.40.

WITH the increase of the number of diseases treated by serum therapy the importance of a knowledge of the various manifestations of serum sickness is becoming more and more recognised. In this small book of 160 pages on serum accidents, the authors have endeavoured to collect and summarise the main papers in the literature, and have added the results of their own experience, together with recently described atypical forms of serum reaction such as paralysis, orchitis, and adenitis. The work has been divided into four main headings: (1) Immediate General Reactions; (2) Delayed General Reactions; (3) Local Reactions; (4) Focal Reactions. The acute manifestations, including the sudden deaths that occur immediately after the administration of serum, are described, while a large portion of the book is devoted to delayed reactions, which may occur from the third to the seventeenth day, the majority being observed on the eighth and ninth days after exhibition of the serum; descriptions are given of meningeal reactions manifesting themselves either as sudden shock, or with meningeal symptoms accompanied by changes in the cerebro-spinal fluid. In the chapter on pathogenesis the authors consider the sudden cases of death to be due to colloidoclastic shock in persons specially sensitive. Similar reports of sudden death due to the injection of peptone have been reported. The delayed reactions are held to be anaphylactic in character, the mechanism being explained as follows: From 10 to 14 days after the first injection there is present in the blood or cells a "toxogénine" or pre-toxin, harmless by itself, which may persist for a long time. At the second injection the antigen unites with the pre-toxin, forming an apotoxin, the toxicity of which is augmented by the complement in the blood and which forms the anaphylactic poison. The section on treatment deals with (1) prophylaxis or preventive treatment and (2) curative treatment. The lessened danger of serum disease when "refined" or concentrated material is used is emphasised and the lines of treatment are standardised.

A bibliography of 86 names is appended and the references are all to French authors, with two exceptions, these being to an English and an American writer respectively. While much has been done by French workers on the subject of serum disease, there is no justification for the omission in the bibliography of the important contributions emanating from other countries.

ULTRA-VIOLET THERAPY.

Clinical Application of Sunlight and Artificial Radiation. Including their Physiological and Experimental Aspects with Special Reference to Tuberculosis. By EDGAR MAYER, M.D. London: Baillière, Tindall and Cox. 1926. Pp. 468. 45*s*.

THE scope of this book is very wide. Many subjects other than light therapy are considered, all of them bearing upon this form of treatment in one way or another. The book has in all 468 pages; of these only 39 are devoted to the Clinical Application of Solar and Aerotherapy, and 73 to Clinical Studies with Artificial Light and the technique pertaining to it. The remaining parts are given up to physics, the action of light on animal and plant life, the physiological action of light and the skin as an organ with special reference to its reactions to light. The small amount of space given to the clinical side may disappoint the practical worker who has been attracted by the title, but the rest of the matter is well worth his attention. The author writes to some extent from his own experience in the treatment of tuberculosis at Saranac Lake, New York State, and his conclusions are that, in treating this disease, reliance should primarily be placed upon rest, diet, and hygienic outdoor existence. For the artificial aids to sunlight treatment the author has a good word; he insists upon the necessity of individual attention upon each case, for he has found that some conditions not responding to sunlight and open air alone may require ultra-violet and heat radiation, X ray exposures, or indeed some combinations of these forms of therapy. He includes in this book a chapter on the X Ray Treatment of Tuberculosis.

The preparation of the book has evidently involved much labour; no less than 100 pages are devoted to a bibliography and index.

ADOLF KUSSMAUL.

The Life and Time of Adolf Kussmaul. By THEODORE H. BAST, Ph.D., Associate Professor of Anatomy, University of Wisconsin Medical School. With a foreword by WILLIAM SNOW MILLER, M.D., D.Sc., Emeritus Professor of Anatomy, University of Wisconsin Medical School. New York: Paul B. Hoeber. 1926. Pp. 131. $1.50.

THIS book is an expanded version of a paper read by its author before the Wisconsin University Medical History Society. Kussmaul is, perhaps, best known in this country as being the first to practise œsophagoscopy and gastroscopy, the instrument used being the endoscope of Desormeaux. This was in 1868, although Cruise, of Dublin, had suggested the use of the instrument for examining the stomach in 1865. Kussmaul was also the first to describe periarteritis nodosa, progressive bulbar paralysis, and diabetic coma with acetonæmia. Dr. Bast gives many particulars of Kussmaul's early life. He was born in 1822 at Graben near Karlsrhue, his father being also a medical man. Adolf Kussmaul had a sense of humour; his name which, Anglicised, means "Kissing mouth" caused him some embarrassment,

and when he was assisting Naegele at Heidelberg the worthy professor advised him to change it. Kussmaul declined because, he said, his family was descended from the noted physician to the Emperor Julian, Oribasius, who after Julian's death was banished from court and settled with some Goths on the Danube. Here his name was translated into Kussmaul from Os, oris, a mouth, and Basium, a kiss. Dr. Bast has supplied a simply written and sufficiently full record of one who benefited his fellows in many ways by his learning, and his little book will be valued by medical historians.

JOURNALS.

VETERINARY JOURNAL.—The April issue is devoted entirely to the subject of clean milk, and contains interesting and authoritative articles on the subject written by members of the veterinary profession, medical officers of health, and others who have practical acquaintance of the relation of clean milk to the health of the general public. An editorial suggestion is made that the best method of ensuring that milk shall reach the public free from injurious matter is by coöperation, for inspection purposes, of medical officers of health and veterinary and sanitary officers, each of whom would find plenty to do in his own sphere without overlapping.

Mr. Gofton, the chief veterinary inspector to the City of Edinburgh, draws attention to the mental chaos of the milk producer and dealer in respect of clean milk, until 1922, when the Milk and Dairies Amendment Act was made law, and milk was officially designated, "The Milk (Special Designations) Order" bringing the necessity of recognising the hygienic quality of milk before the Public Health Authorities, and the traders and consumers. During the past year the Milk and Dairies Act has been strengthened, and though there is room for further amendment, the general public, as a body, have learnt to object strongly to a sediment of cow manure at the bottom of the glass of milk purchased as a beverage. If the public can be brought to see that it is readily possible to produce clean milk, the farmer and dairyman will soon take the necessary trouble to prevent its contamination. The lectures of the National Milk Publicity Council in England, and the Scottish Milk and Health Association in Scotland, both of which aim at increasing the consumption of milk and improving its hygienic quality, are already having their effect, and such institutions as the National Institute for Dairy Research at Reading, and similar schools where instruction is given to teachers and dairy farmers, are producing a sanely critical frame of mind in purchasers.

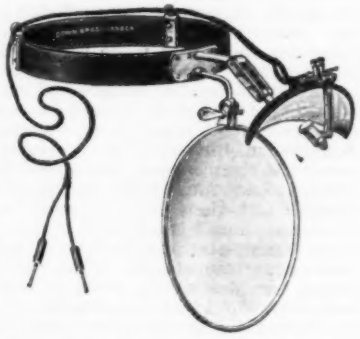
Colonel F. E. Fremantle, in a practical contribution, draws attention to the fact that the average consumption of milk per person in Great Britain is less than a quarter of that in the U.S.A., that tubercle bacilli are still to be found in samples of milk taken in our large towns; and that some 3000 British children die annually from drinking tuberculous milk, a preventable mortality which he describes as "constituting a disgrace of the nineteenth century which must be wiped out in the twentieth." For this elimination process he emphasises the great help which human medicine can obtain from collaboration with veterinary medicine. The same alliance for practical purposes is advocated by Mr. E. J. Burndred of Blackburn, and Mr. Robinson of the Harper Adams Agricultural College. The problems of a clean London milk supply are dealt with by Dr. C. W. Hutt and Dr. J. B. Howell, the medical officers respectively for the Boroughs of Holborn and Hammersmith; and Dr. E. G. Gibbs-Smith, medical officer of health for Teddington, has written an especially practical and pithy article on the dangers of the present bottling system of milk distribution. After pointing out the disadvantages of the present shape of bottle and the faulty method of capping which is used by many vendors, he makes an excellent suggestion (which some of us may still live to see adopted) that a cardboard container (as in the case of cream) should be utilised, which would be used once only and then destroyed. He gives as his particular reason for this, that it would eliminate the danger of infection from imperfectly sterilised bottles, and instances a dairy which he recently visited where the cleansing was done by hand; and where, after the bottles were supposed to be clean, the bottom edge of the insides still contained quantities of congealed milk. Dr. Gibbs-Smith also draws special attention to the advantages of a cap which fits completely over the top of the bottle and opens outwards; and Prof. F. Hobday, in an article embodying the treatment of milk in Sweden, particularly draws attention to the fact that this suggested system of capping is the one almost exclusively used in that country and in Denmark. The treatment of milk in these two countries, which may be considered to have given a lead to all other countries, is fully dealt within two articles by Profs. Morkeberg and Hobday, and attention is drawn to the hygienic quality of milk which is drawn direct from the cow into sterile containers by the use of the Alfa-Laval Milking Machine, which is almost universally employed in Sweden and is now being used extensively in Great Britain. There are interesting discussions on the value of pasteurisation by Mr. Tustin, technical adviser of the United Dairies Company, and Mr. Edward Somer, one of the veterinary inspectors for the City of Birmingham, the latter holding that "pasteurisation is only a palliative measure, and does not help towards the production of clean milk . . . helps to shield the dirty farmer and does not encourage cleaner methods of production."—Other valuable articles, contributed by Mr. G. Mayall, Mr. W. Forbes, and Dr. Nathan Raw, help to make this special clean milk number of interest to those engaged in promoting the public health.

Dr. G. E. Wyeth's "Surgery of Neoplastic Diseases by Electrothermic Methods," reviewed in this column last week, is published in this country by Mr. Humphrey Milford at the Oxford University Press, price 38*s*.

New Inventions.

A MODIFIED FACE SHIELD.

I HAVE had made for me a modification of Killian's face shield with fibre head band in which celluloid is used instead of glass. The Killian's shield is a very useful appliance in an ophthalmic out-patient clinic where it is necessary for the surgeon to approach his face close to that of the patient. In a big out-patients' department it is almost essential, for in addition to acting as a breath shield and allowing surgeon and patient to talk freely without unpleasantness, it protects the surgeon from infections of the throat and nose which he is otherwise almost certain to contract should he be obliged to face a large number of cases daily. The advantage of the celluloid is in its lightness. The glass shield is more transparent, but it has the disadvantage of fogging when breathed on; it is also liable to give rise to headache when worn for a long time owing to its weight. This celluloid shield has also been adapted to the Clar head mirror (half mirror) as shown in the illustration. It has similar advantages to the above when used for work requiring a head light.



Messrs. Down Bros., Ltd., 21 and 23, St. Thomas's-street, London, S.E.1, are the manufacturers.

Madras. R. E. WRIGHT, Lt.-Col., I.M.S.

THE LANCET.

LONDON: SATURDAY, MAY 21, 1927.

MALFORMATIONS OF THE ALIMENTARY WALL.

DIVERTICULA of the colon, to which a large space is devoted this week both in text and illustration, have been known in the dead-house for a century or more, but it is only within recent years that conviction of their frequency in late middle life is being brought home to the clinician; and this, as Sir BERKELEY MOYNIHAN points out, is the result of the increasing frequency of abdominal operations and of the aptitude of radiologists. Among 1000 consecutive patients under the care of Dr. E. I. SPRIGGS, in whom an X ray examination of the alimentary canal was made by Mr. O. A. MARXER, 10 per cent. were found to have some stage of diverticulosis at an average age of 58 years. While the yielding of the intestinal wall is an accepted fact, it is not yet agreed what is the cause of the yielding. Some cases may be congenital in origin, and in others the yielding is ascribed to long-continued increased pressure from within. Addressing the State Medical Association of Texas Dr. W. S. BAINBRIDGE recently stated his personal belief [1] that a large proportion of intestinal diverticula have their origin in the mechanical factors of constipation. But apparently Dr. SPRIGGS's cases were not more constipated than the controls, although there was frequent association with septic foci in other parts of the body, particularly the teeth, and with early arthritis of the spine. One-half of the affected persons in this series suffered no inconvenience from the diverticular state of the bowel, and it is the particular merit of Mr. MARXER's work that he has demonstrated by convincing X ray films the characteristics of a prediverticular state which precedes for a longer or shorter time the condition of established diverticulitis. His pictures show beyond contradiction that diverticula may be quiescent for years, serious symptoms only arising when they become mechanically blocked; it is delay in the pouch rather than in the bowel which is harmful. Identification of the disease at an early stage has completely altered the outlook for these patients, which cannot be judged from the end-results of the operating and post-mortem rooms such as those scheduled in our columns [2] by Mr. L. R. FIFIELD. In the great majority of cases medical treatment will hold the symptoms in check; so long as the alimentary canal is kept clean and lubricated with paraffin under occasional review by a barium enema the severer complications can be postponed and even avoided.

Whether or not diverticulosis is of congenital origin is of considerable interest in view of recent laboratory work on malformations of the alimentary mucosa. It would appear that errors or variations from the normal are commoner than used to be thought, and Dr. A. L. TAYLOR, working in Prof. STEWART's laboratory at Leeds, brings this out very clearly in a comprehensive account [3] of the epithelial heterotopias of the alimentary tract. He describes in all 81 instances where epithelial structures properly belonging to one part of the alimentary tract have been found in another place, and this number could no doubt have been considerably increased if he had searched more thoroughly for the gastric glands which were found in the œsophagus at the level of the cricoid cartilage in as many as 70 per cent. of bodies by SCHRIDDE. Indeed, it seems likely that the complete examination of alimentary canals in serial microscopical sections might yield so many "abnormalities" that some of them would have to be reckoned at least as "normal" as the conventional descriptions in the text-books. Limiting himself, however, to those of which some suggestion was apparent on naked-eye examination and those found in sections made for other purposes, he has found plenty of cases which he classifies into a most interesting catalogue. Gastric mucous membrane is found in the œsophagus, duodenum, ileum (rarely), in Meckel's diverticulum, and in umbilical polypi. Intestinal epithelium occurs in the stomach with surprising frequency: in a series of 158 stomachs removed by operation (and it is only such material that can be examined properly for these details) it was found no fewer than 36 times—i.e., in 23 per cent. of cases. In one case, Brunner's duodenal glands were identified in the gastric mucosa. Similar misplacements of structures which normally lie deep to the muscularis mucosæ were also found: the curious combination of glandular tissue and muscle known as "adenomyoma," occurred in the stomach and duodenum, and aberrant pancreas was found widely scattered in stomach, small intestine, and in Meckel's diverticulum. Misplacements or malformations similar to this congenital series may also occasionally arise, secondarily, in sequence to destructive inflammatory and ulcerative lesions. The whole account is fully documented and forms a valuable survey of a bypath in morbid anatomy. In conjunction with it, Dr. G. W. NICHOLSON's thoughtful papers in *Guy's Hospital Reports* in 1921–24 might be read again with advantage by pathologists and, we venture to suggest, by comparative anatomists as well.

Of the many topics which arise out of these considerations, we can mention only two. It is clear, in the first place, that there is no evidence at all that tumours, either innocent or malignant, have any special tendency to arise in malformations of the alimentary tract. Adenomyoma is in some respects tumourous in character, but it has no particular propensity to develop further along these lines. The more, in fact, that we know of anatomical "embryonic residues," the less likely does COHNHEIM's suggestion become. The second consideration is the clinical importance of these malformations. Most of them have none. But Dr. TAYLOR describes very striking cases where gastric mucous membrane in the ileum was associated with fatal ulceration, where misplaced Brunner's glands led to a duodenal ulcer in the stomach, and where gastric glands in Meckel's diverticulum give rise to repeated small hæmorrhages from the bowel so characteristic as to be susceptible of diagnosis. Adenomyomas of the stomach fairly often give rise to serious dyspepsia: their nature should be recognised for they are liable to be mistaken at operation for carcinoma and an extensive gastrectomy done instead of the local excision which is all that is needed.

[1] Medical Journal and Record, Sept. 15th and Oct. 6th, 1926.
[2] THE LANCET, Feb. 5th, 1927, p. 277.
[3] Jour. Path. Bact., 1927, xxx., 415.

PROBLEMS OF PELVIC INFLAMMATION.

THE recent Congress of Obstetrics and Gynæcology held at Manchester called forth various expressions of opinion on the treatment of inflammatory conditions of the uterine adnexa, and the different points of view are worth recalling. Mr. ALECK BOURNE, who opened the discussion of this subject, confined his remarks to the treatment of acute gonococcal salpingitis, holding the opinion that in severe cases operation should be done in the acute stage, the tubes being slit and drained through the abdominal wall. Prof. BECKWITH WHITEHOUSE spoke of tubal inflammation in general, for which he adopts more conservative methods. It is his practice, he said, to interfere surgically only when there is an extension of infection from the pelvis to the general peritoneal cavity or where there are indications of the presence of pus. When interference is required his preference is for the vaginal route, and his object is to create as little disturbance as possible during the acute stage; fertility is least impaired when the operations performed are of the simplest kind. With expectant methods, he remarked, "there is a strong probability that surgical treatment will be required at a later date, but it will be undertaken at a time when such intervention is safe and with a correspondingly low mortality (2·5 per cent.). It is only in a comparatively small proportion of cases that radical measures, such as hysterectomy, will be necessary after such conservative surgical treatment." At the Birmingham General Hospital between 1911 and 1923, he stated, there were 137 hysterectomies among 387 operations performed for inflammatory pelvic disease; the mortality was 5 per cent. No doubt the operation was done in the belief that the infected uterus remains a menace to the patient even if the tubes are removed. There is very little reason to think, however, that the body of the uterus continues to be a potent source of infection, though there is plenty of evidence that the cervix harbours germs indefinitely. Consequently, it seems that if anything at all is done to the uterus the cervix should be removed, as was advocated in the discussion by Dr. S. J. CAMERON. In gonococcal cases, generally speaking, hysterectomy appears to be quite unnecessary, but it is logical to excise the interstitial portion of the tube with the cornu of the uterus, and this operation has many advocates.

Prof. BLAIR BELL spoke on the conservation of ovarian function in the surgical treatment of salpingitis, and agreed that the ovary should be preserved in its normal position wherever possible. Where this cannot be done, he recommended that the ovary should be grafted elsewhere, as, for instance, to the uterine cornu or the rectus muscle. Whilst all surgeons would agree that the ovary must be kept as long as the uterus is also present, the short life and activity of a grafted ovary makes this procedure of doubtful utility, and sometimes a grafted ovary has had to be removed later because of trouble which has developed in or around it. Several speakers were concerned with the fate of the ovaries after hysterectomy. Prof. ARCHIBALD DONALD, in particular, held the view that they should always be removed with the uterus, and that a woman who has no uterus is just as well without her ovaries. There is very little doubt that the ovaries atrophy rapidly after hysterectomy, and there is no definite evidence that the menopausal symptoms following this operation are any less distressing if they are preserved. In this matter gynæcologists have undoubtedly been swayed by public opinion, and it has become the custom to preserve ovaries—even those in which there is a suspicion of infection—though it is very doubtful if the patient is any the better for this kind of conservatism.

The end-results of salpingostomy performed for chronic tubal inflammation were discussed at the Congress by Dr. BETHEL SOLOMONS, who recommended that during the abdominal operation the tubes should be inflated from the cervix to demonstrate the site of obstruction. He detailed the operations for the cure of tubal obstructions, and reported that 32 patients subsequently conceived out of a series of 72 who were treated by salpingostomy. Although hardly germane to the subject of discussion, it is of great interest to see that so many patients have become fertile after this operation, and this result lends weight to the plea for conservative measures in the acute stages. Further support was given to this view by Prof. A. H. CURTIS, of Chicago, who advocated expectant treatment in gonococcal salpingitis and said that he operated only for the sequelæ of the disease. From the course of the discussion it was clear that the old principle of leaving acute gonococcal salpingitis alone is adhered to by the majority of gynæcologists. The mortality of cases thus left is almost nil; many patients recover so completely that they conceive afterwards; whilst if recurrent attacks of peritonitis occur, operations can be done with greater safety at a later stage, when parts can be preserved which might well have been condemned to removal if seen when the inflammation was at its height. Another point which emerged from the discussion is the importance of distinguishing gonococcal from streptococcal infection, which may be very difficult where there has not been a recent pregnancy.

WATER, PURE AND POLLUTED.

THE water drawn from the deep chalk wells of Kent is of unique purity and nearly inexhaustible quantity, and these wells, as we learn from Sir ALEXANDER HOUSTON'S latest report,[1] contribute about one-tenth of the total drinking water-supply of London, an amount which would suffice at 35 gallons per head per day for the supply of a town the size of Manchester. Sir ALEXANDER HOUSTON takes the reader in imagination a delightful tour of the water-courses of the county, beginning in Deptford with the little known Ravensbourne, where the first pump was worked by a waterwheel designed by JOHN SMEATON and steam-engines by BOULTON and WATT were in action up to 1925. Unfiltered water was used until 1844 when the first filter bed was constructed, and a few years later an open reservoir was made which still remains as an ornamental pond in the district engineer's garden. Then came the epoch of deep well boring which has again made it possible to deliver the water direct to the consumer without artificial treatment of any sort. The only reproach which can now be brought against the Kentish wells is that their pumping operations have reduced the flow of the once abundant surface streams in which trout could be captured within living memory. There would still seem to be plenty of water available in the vast bed of chalk which underlies the county and is only thinly covered by pervious strata where it does not reach the surface; only the new red sandstone is a possible competitor as a water-bearing formation. The depth of the source ensures a cool supply on the sultriest days of summer, and the water is devoid of colour, is completely free from

[1] Metropolitan Water Board. Twenty-first Annual Report on the Results of the Chemical and Bacteriological Examination of the London Waters for the twelve months ended Dec. 31st, 1926. P. S. King and Son, Ltd. 21s.

suspended matter, contains few microbes of any kind, and although hard the hardness is for the most part of a kind which is dissipated by boiling—Sir ALEXANDER HOUSTON does not himself believe that hard water is unhealthy. Some of the wells are situated so far afield as on Westerham Hill near the Pilgrims' Way, and at Sundridge near the source of the Darent; at Eynsford, a little lower down the Darent Valley, the latest boring has just been completed. The abundance of "indifferent" water in the county is contrasted by the Director with the paucity of mineral springs, of which practically the only example is the once famous well at Streatham, the water of which was used for long as an antacid tonic aperient.

The Metropolitan Water Board, with Sir ALEXANDER HOUSTON in charge of water examination, stands as a champion of the utmost refinement in preventing pollution of a water designed for human consumption. It is foolish, the Director has said on several occasions, to allow preventable pollutions to reach a supply antecedent to purification; during and still more after purification it is "simply madness." The moral to be drawn is that cross-connexions of water-supplies should be avoided. The circumstances of an outbreak of illness which occurred at Poplar in July last, and are now the subject of a special report,[1] afford a good illustration of the cogency of this belief. The outbreak, which at first was thought to be due to the ingestion of ice-cream, was soon seen to be highly significant of a localised water-borne infection, owing to its sudden outburst, its brief duration, its incidence on all ages and mainly on women and children, and its selective distribution of cases in the vicinity of the gasworks. The clinical symptoms were remarkably similar, diarrhœa being constant and severe, with fever ranging from 100° to 104° F., and nervous symptoms manifested by convulsions or fits not wholly confined to young children. The symptoms, alarming enough at the outset, subsided for the most part in 24 hours, although two cases ended fatally. After the attack labial herpes commonly appeared, often associated with buccal ulcers. The character of the outbreak closely resembled one which occurred near Mansfield in 1915, due to pollution by sewage of a water main, when there were 1700 cases without a death, and Dr. J. C. G. LEDINGHAM isolated the Flexner Y type of dysentery bacillus. In the Poplar outbreak, however, no microbes were isolated which could possibly be concerned as causative agents, although this does not exclude the possibility of dysentery, for, as Dr. W. M. SCOTT points out, the bacilli may very easily be missed. The most probable source of contamination appears to have been the reflux of polluted water from the local gasworks into a main of the Metropolitan Water Board, and the report contains an elaborate plan of the piping which made this pollution possible. The serious aspect of such an outbreak is illustrated by the experience of Hanover last autumn when a fulminating attack of typhoid was preceded for a fortnight by a "water-sickness," due apparently to the ordinary bacteria of sewage, when 20–30,000 persons suffered from acute gastric and intestinal catarrh. Early last month the town of Elgin had a somewhat similar visitation on a small scale, many families being attacked by violent vomiting generally accompanied by diarrhœa, to which it is reported the medical officer of health himself fell a victim. The outbreak was there traced to a contaminated water-supply, having coincided with the commencement of the cleaning of the main pipe which brings to Elgin the supply of water from Blackhills reservoir. In this case the illness had no serious sequel. The Public Health Council of New York State recently collected evidence[2] of 38 outbreaks of typhoid fever which have occurred since 1903 within the State Department of Health, all of them definitely traced to cross-connexions between public water-supply and polluted private auxiliary supplies. Leakage of check-valves may result, the journal remarks, in polluted water entering distribution systems of potable water and so render void all the costly precautions. Cross-connexions of water-supplies have now been prohibited in the entire State of New York excepting New York City. The serious outbreak of typhoid reported this week from Gravesend is not attributed to pollution of the water-supply.

[1] Ministry of Health Reports on Public Health and Medical Subjects. No. 41. Report on an Outbreak of Illness at Poplar Suspected to be due to Local Pollution of the Water-supply. By George C. Hancock, C.B.E., M.R.C.S. H.M. Stationery Office. 1927. 9*d*.

[2] Journal of the American Waterworks Association, September, 1926.

THE SITE OF THE UNIVERSITY OF LONDON.

IT was announced last week that the University of London had been placed in a position to buy the Bloomsbury site. It enters thereby upon a stage of development where not only will it be able to discharge its great work better, but where it can realise in a fuller manner the noble promise of that work, so taking up the proud position implied by its title. The well-being and the progress of the University of London are necessarily dear to the imagination of the medical profession, which knows well how much it has owed and still owes to the famous medical faculty of the University; but the exigencies of the medical curriculum have been responsible for many vexatious dissensions in the past. The purchase of the Bloomsbury site will have no sequel of that unfortunate sort; all the University must be benefited thereby. The money has been obtained largely through the bounty of the Rockefeller Foundation.

The University now possesses some eight and a half acres, excluding roads, in a most favourable place. It is the site which was bought by the Government for the University some eight years ago, but which was reconveyed to the vendor, the Duke of Bedford, owing to the University at the time finding certain conditions impossible to comply with. The chief among those conditions was the one which required from King's College surrender of its present site, and of this there is no longer any question. Of the eight and a half acres at the disposal of the University one small parcel has already been allotted for the erection of the central offices, which will be transferred there from South Kensington, though the examination rooms at the Imperial Institute may still remain at the disposal of the University. The other most immediate demands upon the site would seem to be recognised by common accord to be as follows—perhaps in order of urgency. There must be a senate house, a central library, a club for teachers, a students' union, and headquarters for an officers' training corps. Large sums of money will be required before such a central framework of a modern university can be erected, and it is perhaps just as well that, for this material reason, there can be no premature rushing into bricks and mortar. Secure in the knowledge that the site is their own, the authorities can proceed to plan a university centre worthy of the capital of the Empire, and can plan it with an eye to proper development as much as to present needs.

Annotations.

"No quid nimis."

THE ROYAL SOCIETY'S CONVERSAZIONE.

ON the evening of May 11th the Royal Society held the first of its half-yearly conversaziones at Burlington House. As is usual at these gatherings a number of exhibits were on view, and two demonstrations were given, the first illustrating the courtship of birds, and the second, by Sir Almroth Wright, F.R.S., dealing with the phenomena of intertraction. Sir Almroth Wright began by describing some observations, made in wounds, which had led up to experiments in vitro on the behaviour of saline solutions and serum in juxtaposition. Having displayed the intertraction between these media he ended his demonstration by showing the traction effects of hypertonic salt solution in a model section of a wound. Another exhibit, dealing (from a different aspect) with the properties of serum, was that of Dr. Thomas Lumsden, who showed the differing effects of treating cancer cells and normal tissues with cytotoxic sera. Accounts of his work at the Lister Institute have from time to time appeared in our columns.[1] From the medical point of view the tests available for detecting small quantities of arsenic are already sufficiently delicate, but it was interesting to note that an experiment demonstrated by Mr. A. A. King has been made the basis of a technique by which amounts as small as 0·00001 mg. may be estimated. The Gutzeit method is used for the preparation of a mercury-arsenic stain upon filter paper, which has been sensitised with pure mercuric chloride. When the paper is viewed in a beam of ultra-violet light transmitted through Chance's ultra-violet glass, which excludes visible radiation, the unchanged mercuric chloride fluoresces blue, while the mercury-arsenic stain stands out as a black disc. Mr. King also showed that under the stimulus of ultra-violet light distilled water is strongly fluorescent. By the use of the most refined distillation processes this fluorescence is considerably diminished, but so far it has not been possible to obtain a distilled water in which it is absent—which is free, that is to say, from any impurity. The application of ultra-violet light to microphotography was demonstrated by Mr. J. E. Barnard, F.R.S., who showed absorption spectra obtained by transmitting ultra-violet light through very thin layers of certain culture media. A series of photographs of bacilli made with ordinary and ultra-violet light showed the improvement in definition gained by using the shorter radiations. An apparatus for recording radiation from the sky, prepared by the Cambridge Instrument Company, was of interest to the radiologist. It consisted of a photo-electric cell so connected in a circuit of appreciable electrical capacity that the frequency of the discharge in the circuit depends upon the intensity of the radiation falling upon it. Experiments on the physiology and genetics of the covered smuts of oats and barley were shown by Mr. S. Dickinson, of the Rothamsted Experimental Station, Harpenden. In the vegetative state these fungi consist of uninucleate hyphæ of two genders (sexes) and infection of the seedling plant occurs only in the presence of both genders. The heterosexual attraction of the genders, regardless of species, was neatly demonstrated. Mr. Dickinson has developed a special technique for manipulating single hyphæ. He takes advantage of the surface-tension effects arising where an extremely thin glass rod is dipped into agar and then slightly withdrawn. The glass rod is mounted on a fine adjustment device by which it may be moved to any part of a microscope's field and by its aid the movement of a single hypha to any desired position is comparatively easy. This ingenious method may have some application to bacteriology. The value of the bolometer as a recorder of radiant heat was demonstrated by Mr. H. Dewhurst, who has invented a new way of making the instrument. A collodion film, sufficiently thin to show strong interference colours, is stretched over an annular disc of sealing wax which contains two inlaid metal contacts; a narrow strip of bismuth, about one-millionth of a centimetre in thickness, is then deposited by electrical evaporation across the film. The use of these extremely thin bismuth strips increases the rapidity with which the bolometer responds to radiant heat and correspondingly increases its usefulness. The British Thomson-Houston Company had a beautiful exhibit of a new type of electric discharge, whilst of general interest were the tie-rods shown by Sir Robert Hadfield, F.R.S., and made of high tenacity non-corrodible steel, which are being used at St. Paul's Cathedral to replace the original wrought-iron bars employed by Sir Christopher Wren. The forthcoming total eclipse of the sun was represented by models made by Dr. E. H. Rayner, of the National Physical Laboratory. One of these, a three-dimensional model of the shadow near the earth's surface, has been prepared for the Radio Research Board to indicate the plan position of the intersection of the moon's shadow with the region known as the Heaviside layer, about 60 miles above the surface of the earth. It is thought that the marked difference between the transmission of wireless waves during the daytime and at night is connected with this layer, concerning which more information is likely to be gained by observation during the eclipse.

[1] THE LANCET, 1926, ii., 112.

LAVAGE OF THE SEMINAL VESICLES.

IN a paper by the late Dr. R. Reith Fraser and Mr. L. B. Goldschmidt on the surgical management of surgical vesiculitis, which appeared in our columns some months ago,[1] the authors discussed the value of vasostomy as a method of treatment of this troublesome condition. They came to the conclusion that the use of this operation shortened the average length of treatment by 75 per cent., and often converted a case which was not responding to conservative measures into one that responded. It is interesting to compare with this the conclusions reached by Dr. Hermann L. Kretschmer, published in a paper read before the Genito-urinary Section of the Academy of Medicine, New York, last November. In this paper the author reviews 66 cases seen at his consulting-room on whom the operation had previously been performed. Of these 66 cases 12 had been operated upon twice, and one three times. The cases were carefully examined and questioned as to the relief that the operation had afforded. Thirty-three of them stated definitely that they had obtained no relief whatever; 11 declared that since the operation the symptoms had ceased; eight gave indecisive replies, and only four were of the opinion that they had been cured. The question of sterility as an end-result was also investigated; two of the patients were physicians who definitely stated that the operation had rendered them sterile; repeated examination of condom specimens had shown a complete azoöspermia, abundant spermatozoa having been present previous to the operation. The possibility of sterility following the operation of vasostomy is, therefore, a point to be considered. As a result of a careful examination of the genital tract of the 66 cases, two observations were made by the authors. The first of these was that in a very large number of cases definite lesions existed in the anterior urethra, either in the nature of actual strictures or of soft, easily bleeding granulations. The second noteworthy feature was the large number of cases showing extensive pathological changes in the prostate and seminal vesicles, changes manifested by hardness, tenderness, or swelling. Forty-seven out of the 66 patients showed these alterations, the rectal findings being normal in only ten. In ten cases no rectal examination was made. Summarising Dr. Kretschmer's

[1] THE LANCET, 1926, ii., 749.

analysis, it may be considered that in 73 per cent. of cases submitted previously to operation symptoms persisted, and in 82 per cent. there existed definite evidence of changes in the prostate or the seminal vesicles or in both on rectal examination. As regards the contained secretions only 11 patients (or 18 per cent.) had normal fluid, while 82 per cent. gave evidence of pus in the expressed secretions. The lesson to be derived from these observations is that failure on the part of vasostomy to relieve symptoms must, to a great extent, be attributed to the persistence of urethral lesions that are untouched by this operation; but even apart from such associated lesions, vasostomy would appear to have very little effect on chronic infections of the vesicle and prostate. Indeed, when the anatomy of these structures is recalled it would be surprising if a single washing out of the vesicle with disinfectant were enough to effect a cure. The pelvis of the kidney is a cavity of comparatively simple structure compared with the lumen of the vesicle, yet a single renal lavage seldom effects a cure in a case of pyelitis. How slender is the hope, therefore, of stamping out a chronic infection of the vesicle by a single vasostomy. Dr. Kretschmer's analysis suggests that little can be expected of it.

THE SURGICAL TREATMENT OF PULMONARY TUBERCULOSIS.

IT was in this country, over a hundred years ago, that the first proposal to treat pulmonary tubercle by artificial pneumothorax was made by James Carson; yet the method was not practised here until long after it had become established abroad, and to de Cerenville, of Lausanne, belongs the credit of having made the first attempts at collapsing the lung by surgical means. His work had but little influence at the time, but a little later Quincke and Carl Spengler—independently of one another—had the same idea, and it is owing to their influence that thoracic surgery has made such strides in Germany. France, like other countries, has been slow in accepting this advance in treatment; even to-day there seems to be a persistent inertia and lack of faith; and it is therefore particularly interesting to read the contribution which L. Bérard and F. Dumarest make to the April number of the *Revue de Phtisiologie*. For a long time these authors have been ardent upholders of modern thoracic surgery, and their results add confirmation to the mass of evidence—mainly German and Scandinavian—in favour of surgical intervention in selected cases of pulmonary tuberculosis. The successful results of thoracoplasty are even bringing about a reconsideration of the rule that this operation is unjustifiable if artificial pneumothorax can be done. Bérard and Dumarest state that whilst artificial pneumothorax gives the best results at the beginning of treatment, its complications and the fact that the lung expands again make it ultimately less successful than thoracoplasty, where the case is chronic and where there is moderate resistance and capacity for the formation of fibrous tissue. Thoracoplasty is applicable only to chronic cases, whereas artificial pneumothorax may be used in acute cases as well, and when it is successful is preferable to a complete thoracoplasty. Bérard and Dumarest consider, moreover, that sometimes a partial pneumothorax with hemidiaphragmatic paralysis has advantages over a complete pneumothorax. They are unquestionably sound in upholding the modern tendency to limit rib resection to the minimum compatible with efficient collapse of the affected part and to supplement this resection by phrenic evulsion. The best collapse of the apex is by partial thoracoplasty involving the first seven ribs; efficient collapse of the upper lobe and of the upper part of the lower lobe can be secured by thoracoplasty of the upper eight ribs and hemidiaphragmatic paralysis. The decision to do a thoracoplasty, as they point out, must not be made on a symptom or on a lesion, but on the considered merits of the individual case, and for this reason they urge that the cases should be studied and operated on in sanatoriums. The indications which they give are long standing, fibrotic and only slightly active disease with adherent pleura and a good general state of health, as well as conditions in which there is marked displacement of the mediastinum, or hæmorrhage. Thoracoplasty is also indicated for cases in which extensive effusion has developed after treatment by artificial pneumothorax, for tuberculous empyemata with mixed infection, and for bronchial fistula. In these last groups, however, the risks of operation are considerably increased. In all cases for which thoracoplasty is proposed the lesion in the opposite lung must be anatomically unimportant, fibrotic in character, and absolutely inactive. There are no special new points in the technique of Bérard and Dumarest, but their observations on two vexed questions are specially interesting. At first, operating in one stage, their mortality was 33 per cent.; later, operating in two stages, it was reduced to 5 per cent. They use either local or general (ethyl chloride) anæsthesia, with a "certain preference" for the latter. Their statistics for 91 cases show "cured" 28 per cent., improved 22 per cent., and an immediate mortality of 18 per cent. Sauerbruch's statistics, which they quote, show "cured" 42·2 per cent., improved 17·5 per cent. and an immediate mortality of 13·3 per cent. These figures are for 646 cases operated on before June, 1925. In the next 18 months 160 cases were treated with an immediate mortality of 5·5 per cent. To sum up, their paper shows once more how much can be done in selected cases, by thoracoplasty and by phrenic evulsion, to ameliorate the condition or arrest the course of pulmonary tubercle after all other means have been tried, and when without surgical assistance the patient is doomed to a decline. Of those whose lives can thus be saved, from one-third to one-half are returned to health, fit to work, whilst an even larger proportion, being freed from infection, can enter again into home life without danger to those around them.

DEFINITION OF BLINDNESS.

THE Blind Persons Act of 1920 has now been in operation for more than six years and, giving as it does certain monetary privileges to the blind, necessitates a definition of that term. The Act itself merely contains the somewhat vague definition, "too blind to perform work for which eyesight is essential." As Dr. A. H. Thompson points out in his Analysis of the Causes of Blindness on p. 1075 of our present issue, only a small proportion of those who need to be educated as blind have completely lost the power of perceiving light or recognising the movement of bright objects. He emphasises the fact that the acuity of central vision is not alone a sufficient criterion of blindness in the economic sense. There are, for instance, persons who can read the smallest type and yet have to be led about the streets owing to curtailment of their field of vision. The Ministry of Health is taking these factors into consideration. Last year [1] Circular No. 681 intimated that any person whose visual acuity with correcting glasses is greater than 6/60, cannot be considered blind within the meaning of the Act unless the defect of eyesight includes such special conditions as a great contraction of the field of vision. Another circular (No. 780) just issued repeats this intimation and states that on the whole the suggested criteria have afforded trustworthy guidance in determining whether a person is too blind to perform work for which eyesight is essential. It should be understood that the limit of visual acuity (6/60) is not to be regarded as a hard-and-fast line. Contraction of the visual field which may be due to glaucoma, to retinitis pigmentosa, to partial optic atrophy, or other rarer conditions, must also be taken into account. Further, "marked nystagmus" is mentioned for the first time as a disabling condition, and, lest any other disabling

[1] THE LANCET, 1926, i., 985.

condition has been overlooked, the circular adds an "etc." under which the certifying surgeon might, we suggest, include cases of myopia of a degree over (say) 20 dioptres, whose visual acuity may still be as good as (say) 6/36. We think the circular will be of service to the certifying surgeon who is required not only to state the degree of visual acuity in each eye of any applicant for State aid, but to give the nature and extent of the visual defects present, and also to state his own definite opinion, formed after due consideration of all the visual conditions, that the person is too blind to perform work for which eyesight is essential.

MEDICAL EXAMINATION BEFORE MARRIAGE.

SHOULD a medical examination before marriage be made obligatory? This question, the title of an article by Dr. Georges Schreiber, secretary-general of the Société Française d'Eugénique, in the February issue of the *World's Health*, has aroused considerable interest in different countries and has provoked a correspondence in that journal which is still continuing. In the original article Dr. Schreiber reviewed the present situation in various parts of the world, mentioning specially those countries in which a medical examination or certificate before marriage is obligatory, and those in which institutions for facilitating such an examination have been provided, although it has not been made obligatory. In France a Bill making a pre-nuptial medical certificate compulsory has been drafted by Prof. Pinard, but no definite action has yet been taken. Dr. Schreiber himself advocates an obligatory certificate, but with optional examination. Referring to Dr. Schreiber's remark that it was regrettable that eugenic legislation in the Scandinavian countries left tuberculosis out of consideration, Dr. Sören Hansen, of Copenhagen, points out, in the March issue of the same journal, that the death-rate from tuberculosis in Denmark has in the last 25 years fallen from more than 20 to less than 10 per 10,000, probably the lowest rate in any European country. They prefer not to brand the tuberculous, but to fight the disease by spreading knowledge as to its nature and how to avoid it. Dr. Apert, of the Hôpital des Enfants Malades in Paris, pronounces himself in favour of persuasion through health education rather than coercion, instancing prohibition of alcohol as an example of the evil effects of compulsion, and pointing out that laws, unless supported by public opinion, cannot alter customs. Prof. Vladislav Ruzicka, of Prague, in another letter, states that he himself had drafted a Bill, which was approved by the Czechoslovak Eugenics Society, requiring a medical certificate before marriage, but this Bill was rejected. The proposed legislation required a compulsory medical certificate as an indispensable legal condition of the marriage contract, the certificate to be signed by an authorised physician and to state that the parties were free from any defect or disease which would interfere with marriage. Some of the objections urged against this Bill were that it would not protect illegitimate children, and that unwillingness to submit to a medical examination might increase illicit relations and hence the number of illegitimate children. Prof. Ruzicka, in answer to this, quotes a German authority who has shown that every condition added to the marriage contract has been followed by a reduction in the number of illegitimate births. In the May number the correspondence is continued by Dr. Stella Churchill, who emphasises the need for public propaganda on this subject. She considers that pre-parental responsibility should form part of sex-teaching in the schools, and does not advocate a medical certificate without examination. She believes that voluntary limitation of families would be the obvious sequence of a medical examination before marriage, and foresees the abolition of "the present rather absurd code about professional secrecy—a code which inflicts misery and hardship on innocent victims." In the same issue Prof. Jeanselme, President of the French National League against Venereal Diseases, pronounces himself in favour of a certificate covering such infirmities as tuberculosis, venereal disease, confirmed alcoholism, epilepsy, and insanity, but he believes, as Dr. Churchill does, that education must precede compulsion. He thinks that the task of educating the public should be shouldered by the leagues against venereal diseases, tuberculosis, alcoholism, and so on. He also points out some of the difficulties in the way of granting certificates and considers that, if the principle is to be adopted, the certificate should be required of both sexes.

A pamphlet issued by the Russell Sage Foundation of New York on the administration of the Wisconsin Marriage Law [1] throws some interesting sidelights on the practical administration of a law requiring medical certificates before marriage. In August, 1913, Wisconsin enacted a law under the terms of which no man applying could receive a marriage licence unless provided with a physician's certificate which attested that he was free from acquired venereal disease. A study of the effects of this law was undertaken by the Russell Sage Foundation in 1920 and concluded in 1925. The main conclusions reached were that the law has had educational value, through newspaper discussion and through the fact that large numbers of men receive a warning as to the dangers of venereal infection at a time when they are most likely to need it. It has been a real factor in inducing men who expect to marry to make sure that they are fit. To some extent the required examination has caused postponement of marriage. A minority of physicians issue certificates without any form of physical examination, but most examinations appear to be thorough, and use is made of the State's free laboratory service. A serious obstacle to the successful operation of the law is that it never had the medical profession actively behind it, because their coöperation was not sought in drafting the Bill. Of the 364 physicians who commented on the law, however, nearly two-thirds expressed generally favourable opinions. The investigators consider that in the present state of public opinion it is practically impossible to subject women to compulsory examination in order to establish their freedom from venereal infection. The law has been handicapped by its very defective requirements and by the absence of any provision for State supervision. No attempt is being made to eliminate the defects and no steps are being taken to win the coöperation of the medical profession. Repeal was avoided only by a narrow margin in 1923, and the State Medical Society neither favoured nor opposed the repeal.

WORKING STANDARDS IN HELIOTHERAPY.

RADIOLOGISTS using ultra-violet rays are confronted by the same problem of practical and accurate measurement of the composite radiation, as has been encountered in the case of X rays. The difficulty of interpreting with any precision the dosage employed by various workers in this field is complicated, in the case of clinical U–V therapy, by the wide variations of individual susceptibility. In the April *Bulletin* of Johns Hopkins Hospital Mr. A. H. Pfund describes his attempts to provide a standard measuring instrument whose range of sensitivity to U–V rays corresponds with the effective wave-lengths in the treatment of rickets. The first part of his paper deals with cellulose compounds as material for windows transparent to U–V rays. Cellophane, which proved to be the most efficient, has the advantage of being waterproof and of darkening only very slowly under the action of the rays. It transmits 50 per cent. of rays at 2550 Angstrom units and between 60–75 per cent. in the region of 3000 A.U., the effective end of the sun's spectrum. While pointing out the opacity of ordinary glass for the U–V rays of thera-

[1] Medical Certification for Marriage. An Account of the Administration of the Wisconsin Marriage Law as it relates to the Venereal Diseases. By Fred. S. Hall. New York: Russell Sage Foundation. 1925. Pp. 92. 50 cents.

peutic value, Mr. Pfund makes no reference to the use of vitaglass for the construction of solaria. This glass, it is true, is opaque to rays shorter than 2700 A.U., but it, unlike the cellulose compounds which slowly become more and more opaque, has the advantage of remaining transparent for the longer rays. In the second part of his paper Mr. Pfund describes in some detail the actinometer he has designed for comparing the antirachitic efficiency of various sources of U–V rays. His method depends upon the excitation of fluorescence in uranium glass by the U–V component of a mixed source of light. The green fluorescent light is compared spectroscopically with the light from an incandescent filament lamp having a suitable filter, the luminous fields due to the two sources of light being focused in apposition. The appearance is thus somewhat like that seen in a polariscope, matching of the two fields being obtained by varying the current flowing through the incandescent filament. The relative efficiency of different sources of U–V rays may thus be referred to the current consumption of the filament lamp necessary to obtain a match with the fluorescence excited by the U–V rays in question. While it may be very useful experimentally, this actinometer is hardly likely to be of so much clinical value as the inventor anticipates. The recent discovery by Rosenheim and Webster of the intensely antirachitic potency of irradiated ergosterol will surely lead to the widespread use of this simpler and less expensive form of therapy in the treatment of rickets.

THE BRITISH MEDICAL ASSOCIATION'S ANNUAL MEETING.

THE British Medical Association's ninety-fifth annual meeting is to be held at Edinburgh in July under the presidency of Sir Robert Philip. It will begin with the annual representative meeting on Friday, July 15th, and the three weekdays following, whilst the work of the meeting will end with papers and discussions at the Scientific Sections from Wednesday the 20th to Friday the 22nd. The gathering is to be made the occasion of the Edinburgh celebrations of Lord Lister's centenary, and Lord Balfour, F.R.S., will preside at a meeting in the McEwan Hall on the evening of July 20th when short addresses will be given by Sir Watson Cheyne, F.R.S., Prof. Harvey Cushing, of Harvard University, Prof. T. M. Tuffier, of Paris, and Dr. James Stewart, of Halifax, Nova Scotia. Relics of Lister's life and work will be on view for some days in the upper library of the old university, and a Lister memorial volume has been prepared, of which copies will be distributed. The other arrangements include the annual general meeting on Tuesday, July 19th, the conference of honorary secretaries on the 20th, and the annual dinner on the 21st. The official religious service will be held in St. Giles's Cathedral on July 19th at 4.30 P.M. From the 18th to the 22nd there will be the usual exhibition of surgical appliances, foods, drugs, and books, whilst the day after (Saturday the 23rd) will be given over to an excursion by special train to St. Andrews. Many other arrangements have been made which will enable members to explore a neighbourhood which is fascinating from innumerable standpoints. In the various scientific sections the subjects of discussion include the results of insulin therapy in diabetes, the treatment of lobar pneumonia, and the pathology and treatment of pernicious anæmia, which will be dealt with by the Section of Medicine, and tuberculosis of the kidney, toxic goitre, and chronic appendicitis at the Section of Surgery, at which papers will also be read on the rational treatment of infected wounds and on burns. There will be two big discussions by the Section of Obstetrics and Gynæcology, the first on the relation of pregnancy to general diseases, and the second on the hygiene of menstruation in adolescents; a number of papers on other topics will also be given. The Section of Pathology and Bacteriology will hold three discussions, two of them in conjunction with the Section of Comparative Medicine, at which a number of speakers will discuss immunity and other problems in the two fields. The first meeting of this section will be devoted to consideration of growth in its pathological relations. The other subjects to be dealt with by the sections are very numerous; some of them are of exceptional interest and we propose to set out the programme at more length in a later issue. In the meantime enough has been said to indicate the many-sided character of the Association's congress, and to suggest that this meeting in the Scottish capital promises to be especially attractive.

THE DOGS PROTECTION BILL.

SEVEN years ago, when moving the second reading of the Dogs Protection Bill in the House of Commons, of which he was then a Member, Lord Banbury of Southam claimed THE LANCET as a supporter. The article on which the claim was based appeared in our issue of May 31st, 1919, and stated that "the experimental use of dogs has advanced our knowledge and has been of benefit to suffering humanity." These lines were not quoted in the House of Commons, the speaker contenting himself with citing the next passage wherein it is admitted in so many words that certain results might have been obtained otherwise —of course, in the light of later information. For scientific developments may at any time enable workers to undertake analogous researches on lowlier animals, and all rejoice when the use of any animal as a test object can be superseded by other technique, or rendered unnecessary by new knowledge. We pointed out at once the misrepresentation of ourselves, but unavailingly, for in 1924 Lord Banbury, when proposing the second reading of a similar measure in the House of Lords, again brought forward THE LANCET as backing him. We protested to Lord Banbury against this repetition of the inaccuracy with an explanation (that should have been unnecessary) of the attitude of THE LANCET. But it seems that he cannot forgo the value to his cause of declaring that his views have received our support, and whereas formerly he did at least quote our statement correctly, he no longer troubles to do so. In the current issue of *John Bull* he says that "it has been admitted in THE LANCET of May 31st, 1919, that the results obtained by experiments on dogs could have been equally obtained in other ways." There is no justification for this reading of our statement, and we should never have admitted anything so patently untrue.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee 34 cases were considered and £571 10*s.* voted to 30 applicants. The following is a summary of the new cases relieved.

Daughter, aged 62, of M.R.C.S. who died in 1876. Only income is a pension of £50, as the sister with whom she was living died recently and her pension died with her. At present applicant is living with an invalid niece. Voted £36 in monthly instalments.

Widow, aged 64, of M.R.C.S. who died in 1892. Owing to ill health and age, has been advised to give up her nursing, with which she supported herself. Daughter, aged 35, is married, with two children, and is unable to assist the applicant. £75 was received from nursing in the past twelve months. Voted £36 in 12 monthly instalments.

Widow, aged 69, of M.R.C.S. who died last year. Has two sons who are married, and is staying at present with the eldest one, but neither son is in a position to give financial assistance. Voted £36 payable in 12 monthly instalments.

Daughter, aged 60, of M.R.C.S. who practised in London and died in 1913. Lives in Paris, and has supported herself by teaching and translating. Owing to illness has not been able to meet expenses. Voted £26.

Wife, aged 41, of M.B. who was helped by the Fund in February and August last year as he is trying to build up a practice in a small way. Applicant is working in a small post on commission, and does not make sufficient to cover expenses. There are two daughters who are at school and have bursaries, their outfit having been provided by the Church. Voted £12 towards repaying debts.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCXXIV.—THE MEDICAL TREATMENT OF CANCER OF THE STOMACH.

IN no form of malignant disease are the results more depressing than in carcinoma of the stomach. The absence of early symptoms gives the patient little warning and the obscurity of the physical signs often leads to delay in diagnosis. It must be added that, even when diagnosis has been made very early, the results of treatment, whether surgical, medical, or radiological, are seldom less disappointing.

In a later paragraph it will be laid down that surgery plays a most important part in the treatment of gastric carcinoma. There are, however, many cases which are unsuitable for operation on account of the patient's general condition or the extent of the local lesion; there are others where surgery is not indicated even apart from these factors; and there are yet others which call for medical treatment when surgery has failed. The medical treatment of cancer of the stomach is therefore a problem frequently before every medical practitioner.

Curative Measures.

Attempts at curative treatment fall under three headings: (*a*) surgical, (*b*) medical, and (*c*) radiological, two of these forms of treatment being frequently combined.

Surgical.—Excision of the primary growth still presents the greatest hope of cure. It should be attempted whenever possible. In this connexion it must be remembered that pyloric growths producing gross gastric retention, with dilatation of the stomach and profuse vomiting, are not infrequently small in size and relatively easy to remove surgically.

Medical.—Curative medical treatment usually takes the form of intravenous injection of salts of the heavy metals, such as copper, lead, and selenium. Great caution is necessary, and the results so far have been interesting rather than encouraging. Attempts to cure cancer of the stomach by special diets have been uniformly unsuccessful. The Wassermann reaction should be determined in every suspected case, benign gummata having occasionally been mistaken for malignant growths.

Radiological.—Deep X ray therapy may be tried, but should never be substituted for surgery in operable cases. I have frequently seen amelioration of symptoms follow its employment, but never cure. The implantation of radium or radon by a minor surgical operation is often a preferable form of radiological treatment; the growing edge of the carcinoma can in this way be attacked and localisation of treatment is easier.

Palliative Measures.

The treatment of symptoms and complications again falls under the heading of surgical, medical, and radiological.

Surgical.—The commonest use of surgery in cancer of the stomach is for the prevention of obstruction. Remembering that pyloric obstruction is a frequent cause of death in these cases, the practitioner will be at pains to secure a short-circuiting of pyloric growths at a stage when such a procedure is practicable. The selection of such a site for the stoma that subsequent blockage does not occur is a matter of surgical technique which is outside the scope of the present article. Surgical operations for the prevention of pain by nerve-section are infrequently required.

Medical.—Here two main aspects of the disease overshadow all others; they are (1) obstruction, and (2) pain.

(1) *Obstruction.*—The necessity for the surgical prevention of obstruction has already been emphasised. Cases are met with fairly often in which the extent of the disease or the patient's low condition preclude such operations. Obstruction of the cardiac orifice is not here considered; its treatment does not materially differ from that of œsophageal obstruction.

In inoperable pyloric obstruction the treatment of greatest value and most frequently neglected is *gastric lavage*. It cannot be over-emphasised that gastric lavage is a procedure which patients, with very little practice, can themselves perform with ease and considerable advantage. A soft rubber tube, of about the calibre of the little finger, and if possible furnished with a single large opening half an inch above the tip, should be selected. The patient should be taught to pass this at first daily, later as often as required, and the stomach should be washed with normal saline until relatively clean and empty. Sodium bicarbonate solution is useful if there is any excess of mucus, and opiates may be added later by this route if there is an indication for them. Gastric lavage should never be delayed until the time when it is an increased burden to the patient; he should, on the contrary, learn its value in the early days, just as a patient in the early days of an attack of pneumonia will learn to appreciate the value of oxygen and call for it gladly, even in the delirium preceding the crisis.

Diet is of great importance. Patients with carcinoma are seldom hungry, and there is no evidence that forced nutrition has any effect in delaying the progress of their malady. If therefore hunger is allayed there is no reason for attempting to provide a large diet. The problem of obstruction remains the most prominent. Foods containing cellulose, such as green vegetables, brown or branny breads, fruits other than orange-juice and soft bananas should be excluded, together with meat or fish in any large pieces, unless obstruction in any degree be absent. Soups, carbohydrate gruels, milk, glucose solutions, and orange-juice are the foods of choice when obstruction is threatened, and alcohol is, in my opinion, a most valuable adjunct in these cases on account of its calorie value, sedative effects, and ready assimilation.

There is nothing illogical in the combined use of such foods with gastric lavage; a partially obstructed stomach frequently relieved by lavage will allow the progress of more fluid than such a stomach treated in any other way. In inoperable cases of severe pyloric obstruction nutrient enemata must be employed to relieve thirst.

(2) *Pain.*—Much of the pain and discomfort of cancer of the stomach is due to obstruction, and should be avoided by the measures described above. There remain the pains of nerve involvement or due to the spread of the disease elsewhere. Analgesics, such as bromides, pyramidon, allonal, and diacetate are often valuable in the early stages. Luminal is sometimes very effective in controlling nausea and vomiting.

When the diagnosis is quite definite and pain and discomfort are prominent, there is little to be gained by delaying the use of opiates. In my experience, much needless suffering is caused through the mistaken belief that a stage in the disease will be reached when morphia in any form will become ineffective. As regards cancer of the stomach, this is a profound error. It is seldom necessary to give more than small doses of omnopon, or of such time-honoured preparations as tr. chloroformi et morphinæ co. or tr. opii, in order to secure ease for the patient, provided that gastric lavage is used to allay the symptoms of obstruction.

The personal attitude of the doctor towards his patient is at no time of greater importance than in these cases, and a steady optimism in the face of tragedy is both helpful to the patient and justified by the progress of medical science.

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Special Articles.

UNIVERSITY COLLEGE, LONDON, AND MEDICAL EDUCATION.

Being a Centenary Address delivered at University College on May 13th, 1927,

BY SIR JOHN ROSE BRADFORD, K.C.M.G., M.D., F.R.S.,

PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON; EMERITUS PROFESSOR OF MEDICINE IN UNIVERSITY COLLEGE.

IT is perhaps fitting, seeing the part this College has played and is playing in medical education, that one of the centenary addresses should be devoted to a subject that must necessarily be of considerable interest to the community when we consider the ever-increasing importance of the part taken by medicine in our daily life even when we regard ourselves as being in vigorous health, to say nothing of the services required when disease is present or threatened. Our founders were not only animated by high ideals, but must also have been in some respects not entirely devoid of interest in what are sometimes called practical aims. Thus at the foundation of the College there were but two faculties, one of arts and laws and one of medicine, and here the history of the College is not unlike that of the history of all human activities. From very early times man has not only been profoundly interested in the study of those activities of the mind that are embraced in what is now understood by the term "faculty of arts," but also from the earliest times he has recognised that if he is to survive he must regulate his life according to his knowledge of the facts of Nature, and he must also enter into regulated relations with his fellow men. In founding this College with a faculty of arts and with a faculty of medicine, our founders recognised these fundamental principles, and probably there is nothing very remarkable in this, but what was remarkable, and what I hope to show in this address, is the extraordinary breadth of view that stimulated them and what a grand conception they had as to the real requirements necessary for the adequate study of medicine. Further, I shall hope to show that this College has been faithful to the trust imposed upon it by its founders and that in the past century it has not been unworthy of this trust.

Problems of Medicine.

Medicine as a study and branch of knowledge has many attractions, and amongst these may be mentioned the very wide range of its scope, its extraordinary diversity, and its numerous relations with other varieties of human activity. This, no doubt, is one of its greatest dangers, inasmuch as it leads frequently to the presentation of such complex issues that much courage is required in order to overcome the feeling of hopelessness, and possibly even sometimes of despair, that may be engendered. The problems of the statesman, of the soldier, and of the lawyer are universally recognised as being often of such difficulty as almost to defy solution, but the problems that beset the follower of medicine are certainly not of lesser difficulty and require for their solution no less ability and no less degree of adequate study and preparation. After all the statesman, the soldier, and especially the lawyer, has to pit his intelligence against that of another human being. His problems are difficult enough, but they are in the main and essentially problems set by man. The doctor, even the humblest and the least well-equipped by education, perhaps, has all his problems set to him by Nature. This does not add to the ease of their correct solution; further, there is no court of appeal, and Nature certainly is, and always has been, a stern judge. For these reasons it is surely of paramount importance that medical education should be organised on the best possible lines and that the future practitioner should at any rate have the opportunity of acquiring an adequate conception of the real nature of his work before he becomes immersed in, and possibly overwhelmed by, the so-called routine of medical practice.

We talk of the principles and practice of medicine, or the science and art of medicine, just as the soldier talks of the science and art of war, and these are not fanciful distinctions, but matters of the greatest importance. A doctor who neglects the principles or science of medicine is not likely to have any greater success than a general who violates a fundamental principle of the science of war, but in both cases the judgment meted out will probably be professional rather than lay, inasmuch as the layman necessarily is often unable to appreciate the real issue. A practitioner of the art of medicine who does not regulate his art by his science often escapes criticism by the supposition commonly entertained that medicine is only an art and not a science, and that there is something mysterious about disease that removes it from the category of things and leaves an opportunity for the action of chance, or of some other equally vague conception. In other words, it is not realised that our failure or our uncertainty is due to our want of knowledge or possibly to the misapplication of our knowledge.

Whereas the art of medicine is very ancient and teachers of this art flourished many thousands of years ago, the science of medicine is of comparatively recent origin. Hippocrates, as we all know, was a great exponent of the art of medicine, and we are still indebted to his genius for much of our knowledge, even in the twentieth century medicine. The science of medicine may be said to date from Harvey, a matter of some 300 years, but the application of the science of medicine to the art of medicine is a matter of much more recent date; and it is here, I think, that University College has played a not undistinguished part. I would like to say at the outset that it is not a question so much of any particular discovery having been made within these walls or by those connected with the College, although there have been many such, and some of them great, but rather the broader question of the relation of the science of medicine to other sciences and to the art of medicine, and perhaps the most important of all, the development of scientific methods and of the scientific type of mind in the pursuit of the art of medicine by the practitioner in his daily work. It may, perhaps, be said that in the pursuit of the science of medicine the disease forms the focus of attention, and in the pursuit of the art of the medicine the patient must be the first consideration. Yet little or no success is likely to be achieved if the art be practised with unscientific methods or in an attitude of mind that is not familiar with the law that like causes produce like results, and that the numerous apparent contradictions that we see in our daily work are not real exceptions, but only apparent ones, due to the fact that the conditions are not really the same, although they may at first sight seem to be so. Medicine could give many illustrations of the truth of the great principle of *déterminisme*, laid down with such insistence in the writings of the French physiologist, Bernard.

Medical Training a Hundred Years Ago.

The really great clinicians of the past who pursued the art of medicine, and were in truth great artists, were nevertheless men who observed with scientific method, and controlled their observations with scientific reasoning; hence the value of their results, and in many cases their successors through the centuries have only been able to admire their skill and marvel at the results they achieved with the limited means at their command. These great men attracted followers, and thus the teaching of medicine commenced; the disciples attended the Master and listened to what he had to tell them, and doubtless they tried to imitate his methods. It is scarcely an exaggeration to say that the teaching of medicine, in England at any rate, had not advanced very much beyond this stage at the time of the foundation of this College.

This country has had many great clinicians, and some of them have been physicians or surgeons attached to the hospitals of this country of ancient foundation, and such men, like the ancients, attracted students who followed their practice in the wards, and in this way acquired some clinical knowledge. They "walked the hospitals," a phrase that came to be descriptive of a certain stage in the career of the student of medicine, and I am not sure that some of the great public are not still under the impression "that walking the hospitals" forms the major part of the educational programme of the present-day student.

The student, besides walking the hospital, did two other things; he was apprenticed to some practitioner, and under such circumstances might or might not acquire medical knowledge that would be of service to him in later life. Unquestionably he acquired a varied knowledge of human nature, which is one of the most important assets that he will require in his after life as a practitioner. The student also often attended some private school of anatomy, of which there were many, and here I may mention that I am old enough to remember the last of these, and my own father attended as a young man one of the most celebrated and notorious of such schools.

I do not propose to criticise these methods of education; they must have possessed some value, otherwise the history of medicine in this country would not contain the honoured names that it does. What I want to emphasise is the isolated and secluded character of the instruction given, and how it was entirely directed to the production of a practitioner. As an apprentice, as a student at an anatomy school, or as one walking the hospitals, the ordinary student had no opportunity of widening his outlook on life, or of coming into contact with other branches of learning. It is true that at the ancient seats of learning in this country there were very small numbers of men who, having studied in the humanities, subsequently embarked on medicine, and some of the greatest names in British medicine are those of such men, but the ancient universities did not afford facilities for the prosecution of medicine, and the great developments that have taken place in these old universities are subsequent to the foundation of this College, and are by no means unconnected with the developments that have been initiated here. It is also true that certain of the London hospitals had schools directly associated with them where members of the hospital staff gave instruction, not only in clinical subjects, but also in certain other subjects, especially anatomy.

Sir George Thane, our chairman, pointed out in an introductory address given by him in 1879 in this place, that in the year 1828 medical education in London was practically limited to providing the instruction required by the licensing bodies, and this was not of a very extensive character. Thus the College of Surgeons required that a candidate for the diploma should have been engaged for at least six years in the acquisition of professional knowledge, and that he had attended certain courses of instruction—i.e., three courses of anatomy, two of dissections and demonstrations, one of chemistry and one of midwifery, one of materia medica and botany, and one of practice and theory of physic. Further, he had to attend for one year the surgical practice of a recognised hospital. To fulfil these requirements the future practitioner of medicine became an apprentice to a practitioner, and not infrequently he entered on this when only 15 or 16 years of age, and came to London only for one or, at the most, two years, and there followed all the courses of instruction provided by the hospital or private school concurrently. Thus he went to such lectures as he was compelled to attend, he dissected, and he "walked the hospital or hospitals," all at the same time.

The London hospitals that had schools attached to them at this period were St. Bartholomew's, St. Thomas's, Guy's, and the London. Not infrequently the student attended at more than one school, and still more frequently he attended one of the private schools, owing to the reputation and fame of some individual teacher; this applied, perhaps, more especially to the schools of anatomy that occupied a very prominent place in the medical curriculum. The London hospitals at this period included amongst their staffs physicians and surgeons not only distinguished for their knowledge, but also men who were able teachers, and men who were capable exponents of some of the sciences ancillary to medicine. Medicine has not only received benefits from science but some of the results of so-called pure science have been obtained from the researches of men who were primarily practitioners of the art of medicine; and hence it is not strange that teachers of such subjects as chemistry and botany should have been found from the ranks of medicine.

The Limited Outlook.

Nevertheless, the system of medical teaching here outlined as that prevalent when this College was founded was profoundly unsatisfactory, more especially from two points of view. In the first place, it was not only inadequate and imperfect, it also entirely lacked organisation and systematisation; but it also suffered from a much more serious defect than this, in that the educational problem was looked at from a far too narrow point of view. The aim was to produce an efficient practitioner and this must necessarily always be the aim of any scheme of medical education, but this result is not likely to be achieved if a scheme of instruction is devised that isolates the student and confines his outlook.

A hundred years ago the outlook of the student was limited from childhood; he became an apprentice when little more than a boy, at a most impressionable age, and from that time onward his teachers were animated by the desire to direct their teaching solely to the supposed immediate practical requirements of the moment. Anatomy was taught by a surgeon from the point of view of the surgeon of that day—i.e., for its direct practical utility. I remember in my own day a teacher of medicine saying that just as a cabman must know the anatomy of London so a doctor must know that of the human body. This is, of course, quite true, but the real point is whether that is the sole reason for the cultivation of anatomy by the medical student, whether he should be taught to confine his ambition to that of the cabman or whether there is likely to be any gain to him purely as a practitioner from having an opportunity at any rate of perceiving that the study of anatomy may be pursued from a different standpoint and with other and less limited aims.

It is, of course, an old and difficult question, this question of medical education, and the increase of knowledge does not make the problem any easier. Is disease to be recognised and treated by a kind of rule of thumb method, or is the student to be educated on lines that attempt to develop his intelligence so that he may be equipped to deal with the complex problems that will fall to his lot? I think our founders had no sort of doubt as to their views on this matter. They looked on medicine not only as a practical art of great importance to all of us, but they also regarded medicine as a branch of learning that should take its place with other learning in any university that deemed itself worthy of the name.

A Debt to Edinburgh.

A hundred years ago there was, at any rate, one university in these islands where these views prevailed, and that was the University of Edinburgh; this is a fact of special interest to us, since the debt of this College to the University of Edinburgh, and especially so far as concerns the faculty of medicine, is a great one. This debt is not only that many of the early professors and some of the greatest of them came to us from Edinburgh, but in addition, the organisation of the faculty of medicine, and, indeed, the whole conception of the foundation of the faculty and of the hospital, are strikingly similar to those carried

out at Edinburgh a hundred years before the foundation of this College.

Last year the University of Edinburgh celebrated the bicentenary of its Faculty of Medicine, and the tale of its foundation was then retold, and how the inspiration that led to its foundation was derived from the University of Leyden, when the great Boerhaave, perhaps the greatest of clinical teachers the world has seen, so influenced certain young Edinburgh men that on their return to their native city they took steps that led ultimately to the foundation of the Faculty of Medicine in 1726. We are not concerned here with the details of this story, interesting as it is; suffice it to say that the faculty was started without any special clinical facilities, and that some years later—i.e., in 1738—the Edinburgh Royal Infirmary was founded in order to provide a suitable hospital to afford clinical facilities for the teaching of medicine. As you will see, a similar course was pursued here, and our hospital is unique amongst the great teaching hospitals of London in that, like the Royal Infirmary of Edinburgh, it was founded, thanks to the energy of the young Faculty of Medicine and the generous wisdom of the governing body of this College, as a means to provide full opportunities for the adequate teaching of clinical medicine and surgery.

I do not think it is an exaggeration to say that the foresight, wisdom, and courage of our founders must have been very considerable for them to have embarked on the foundation of a faculty of medicine, with a very ambitious scheme of development, with no hospital and no obvious likelihood of acquiring a hospital, without which the scheme must have come to nought. They are certainly entitled to our profound admiration and their work should inspire their successors not to fall short of their high standard.

New Ideals at University College.

The Faculty of Medicine of this College, when constituted 100 years ago, included professorships in chemistry, natural philosophy, botany, comparative anatomy, anatomy and physiology, materia medica, medicine, surgery, and midwifery.. Medical jurisprudence and pathology were added almost immediately. The courses of instruction extended from October to May and the curriculum extended over a period of four years. It is, perhaps, scarcely necessary to dwell on the contrast afforded by such a scheme of education with that then in vogue in the medical schools of this country, but after all, although schemes and curriculum may have some value, the real determining factors are the ideals, the character, and the ability of those to whom is entrusted the carrying out of the scheme. The professors appointed to teach these subjects were unquestionably a most distinguished body of men, each of whom had achieved distinction in the branch of knowledge committed to his charge, and some had become entitled to a fame that is undimmed by the lapse of a hundred years.

Amongst these early professors, either appointed at the foundation or within a few short years of the opening of the College, may be mentioned: In chemistry, Turner and Thomas Graham; in natural philosophy, Lardner; in botany, Lindley; in comparative anatomy, Grant; in anatomy and physiology, Jones Quain, Sir Charles Bell, and Sharpey; in materia medica, Anthony Todd Thompson; in medicine, Conolly and Elliotson; in surgery, Sir Charles Bell and Samuel Cooper; in midwifery, Davis and later, Murphy; in pathology, Sir Robert Carswell. It is, perhaps, not surprising that with such teachers the Faculty of Medicine of this College, which began its teaching in October, 1828, one month before its sister Faculty of Arts and Laws, included some 300 students in the second year of its life. This large number of students showed also that there was a real demand for teaching of the character provided and that it is not really true that the student's horizon is limited to the requirements of examining and licensing bodies. The success of the Faculty of Medicine was thus assured from the very outset, and this, notwithstanding the fact already mentioned, that the hospital did not exist. In order to provide some opportunities for the teaching of the clinical subjects a dispensary under the charge of the professors of medicine and surgery was opened in George-street, and this dispensary contained a very small number of beds, probably what we should now call casualty beds, for the relief of the more severe cases of sudden illness, and certain arrangements were made with a neighbouring hospital, the Middlesex, for our students to have the privilege of visiting its wards.

It must be borne in mind that at this period, 100 years ago, regular systematic clinical teaching was not in vogue in any London hospital, the students simply walked the hospital—i.e., attended the visits of the medical officers and watched their proceedings, and more especially the operations in the case of the surgeons. The surgeons of this time when, of course, there were no anæsthetics, had developed a technique in which great manipulative dexterity and a phenomenal rapidity of operation were essential to success. It was the period of "brilliant operating," and the surgeons of the greatest skill and eminence operated in the presence of large audiences of students, and it was a point of honour to perform operations, especially amputations, in a time limited to seconds. I believe that prior to 1828 not only clinical professors but even clinical lectures were unknown in London, although in the University of Edinburgh there was a chair of clinical surgery, and such instruction as the students received during their hospital visits was casual and Socratic or conversational in character. To remedy this grave defect in medical education, our founders instituted two clinical chairs, one in medicine and one in surgery, held by Sir Thomas Watson and Sir Charles Bell respectively, but since there was no hospital their lectures and instruction were given in the Middlesex Hospital.

The point that requires emphasis is that this was the first step taken in organising and systematising the teaching of clinical subjects and the recognition that such subjects demanded the same methods of organised teaching that obtained in other branches of knowledge. Naturally, the development of this method could not take place freely until the faculty had a hospital of its own, and so soon as this was obtained the further development of this organised clinical teaching took place and two special clinical professorships, known subsequently as the Holme professorships, were founded with the special object of training students in the observation and study of disease. The fame of Robert Liston, who held for some 12 years the professorship of clinical surgery, was not a small factor in the success of this school as a centre of efficient teaching.

The Organisation of Clinical Knowledge.

This conception of the founders of our College and the means they took to make it operative are, I think, amongst the most valuable of our assets, and perhaps like some other possessions, their real value is not fully appreciated until they are lost. The underlying idea of our founders was that the realm of clinical knowledge was a subject worthy of the same treatment as that accorded to other branches of knowledge in a university, and that it demanded full equipment and organisation. That is a position that has not always been conceded, nor even at the present day is it as universally recognised as it should be.

There is sometimes an impression that what is called clinical research as well as clinical teaching is not of the standard or quality that justifies the use of such dignified words as those of research or teaching. That, however, is perhaps rather a matter of the individual than of the subject. Clinical research has in the past had followers of the greatest intellectual attainments, men who by their discoveries in clinical medicine have permanently influenced medicine—for example, Sydenham in the seventeenth century and Hughlings Jackson in our own. The teaching of

clinical medicine calls also for special qualities owing to the intrinsic difficulties of the subject arising, partly from its complexity and largely from the fact that the material is that of suffering human beings. The teaching of most subjects of any university curriculum does not present the difficulties that beset any clinical teacher who is desirous of treating his subject with scientific method and accuracy.

Although I have emphasised, perhaps at too great length, these developments in clinical teaching, after all the greatest thing our founders did was to place the teaching of each subject in the medical curriculum in the charge of an expert in that branch and thus ensure that the subject should be envisaged from a broad and not from a narrow and purely utilitarian point of view. That is a conception that has persisted for the 100 years that have elapsed and has slowly spread from here to every medical school in the country and has, I hope, affected the outlook of every student of medicine that has passed through its halls. We know that it has been successful in producing during the last 100 years a number of men who have, thanks largely to the inspiration they received from the ideals of their teachers, enlarged the boundaries of human knowledge.

Scientific Method in the Teaching of Medicine.

It is difficult to lay too much stress on the effect of such a policy in the case of such subjects as anatomy, physiology, and the biological, chemical, and physical sciences ancillary to medicine. Medicine itself is such a complex study that it is by no means well suited for the training of the average individual in what we may call for simplicity, scientific method. Great men with gifts may achieve results of the first importance in medicine by their researches and yet never have received any special scientific training. There have been many such, but this will not be the common lot, and for the multitude it is essential that an adequate training in scientific method should be provided, and it is equally essential that the imagination should be stimulated by such training, and this is most likely to occur when the subject matter is dealt with by one devoted to its study for its own sake. No doubt this method is liable from time to time to cause difficulties, owing to the well-known impossibility of getting a quart into a pint pot, but on the whole the advantages outweigh the drawbacks.

Placing the teaching of these subjects in the hands of unquestioned authorities on them led to other developments that have brought about great changes in teaching, and for that matter, in examining. The professors very early on instituted practical classes; there were practical classes in chemistry from the beginning of the life of the College, and as early as 1845 a second professor of chemistry under the title of professor of practical chemistry was appointed. Sharpey, the great professor of physiology, instituted practical classes in histology, and in 1855 a separate teacher of practical physiology and histology was appointed, and later on Michael Foster occupied this position until 1870.

It is interesting to note that University College did not follow the requirements of the licensing bodies and institute practical classes after they had been made compulsory by such examining bodies, but rather that University College established the practical classes to render the teaching more efficient, and ensure that the student's knowledge was obtained first hand, and then the examining bodies followed suit and laid down regulations making such classes obligatory. The history of the College in later years is somewhat similar; there have been occasions even in quite recent times when teachers have tried to instil in those controlling examinations the methods that should be adopted, and it would seem that this is really a sound and truly physiological method that has also the record of past successes in its favour. The practical classes were not confined to subjects in which laboratories formed an integral part of the teaching equipment, they were also instituted in the routine teaching of clinical medicine and surgery, and classes were formed enabling every student to receive definite and systematised instruction in the physical signs of disease. This was a most important development inasmuch as it introduced scientific method in the teaching of the art of diagnosis of disease, and some of the most distinguished of the physicians of University College Hospital have been noted for their work in this branch of medicine. Here I may mention two names, first that of Elliotson, who was a pioneer in introducing the stethoscope in this country, and Walshe, who by his work, his writings, and his teaching placed the study of the physical signs of disease on the secure basis that has been maintained ever since. Walshe, through his pupils, carried the teaching of physical signs to more than one of the great medical schools of London. Thus the teaching of medicine was rapidly put on the same level as that of the teaching of other branches of science; it was organised, systematised, and made objective and real, the student being made to realise facts for himself and not merely listen to *ex cathedra* utterances.

There was another far-reaching development initiated in this College by the foundation of the chair of pathological anatomy in 1828, and although our founders held the view that the art of medicine must be founded on the study of morbid anatomy, it was not until 1872 that this subject became a compulsory one in the medical curriculum. Here, however, in season and out of season, from the foundation of the College to the present day, all the teaching of medicine has been correlated with the teaching of morbid anatomy, and our belief and tradition have always been that this is essential for the progress of medicine as a science. Our greatest teachers, like Walshe and Jenner, were insistent on this, and much of the success of our students in research, in teaching, and in the practice of their profession, is, to my mind, dependent on this method of training that is a stern corrective of fanciful and theoretical medicine that at all periods, including the present day, has its exponents who do not usually hide their lights under a bushel, and to whom the close association of the art of medicine with the facts of the dead-house is only a subject for cheap witticism.

The Student's Opportunity.

Another element that has had a great influence in the history of this College in all faculties, and not least in the Faculty of Medicine, is the fact that teachers have always recognised that one of their main duties is to enlarge the boundaries of knowledge and do all in their power to stimulate research. Some have done this by their own work, others have achieved great results by the inspiring of their pupils, but all have necessarily produced incalculable results in modifying the outlook and point of view of every intelligent student who has come under their influence. I do not propose to attempt even to sketch what has been done in this direction in the past 100 years; all I desire to draw attention to is that so great was this influence that there have been many teachers here from the days of Sharpey and Wharton Jones to recent times, who have so inspired their pupils that these, even during their student career, have embarked on researches that have proved to be of permanent value. The early histological and physiological researches of Lister are a sufficient illustration of this fact, and such facts form one of our most valuable traditions.

In conclusion, I would desire to allude to other changes profoundly affecting the medical student that were initiated here either by our founders or by their early successors. A hundred years ago the student was in a measure the appanage of some individual member of the hospital staff, in order to obtain the advantages of following his practice in the wards of the hospital he had to become his pupil and pay him personally a fee. Later, when resident appointments were instituted, house physicians, house surgeons were personal appointments by the physician or surgeon concerned, and here, again, a fee was payable. All such methods were swept away here

and all appointments were made on the ground of merit alone, and no fees of this kind were received by the staff. When we remember the great value of these appointments to the student, there is probably no appointment to a young man of such value as a house physiciancy or surgeoncy, and when we remember the extremely important part these officers play in the life of a teaching hospital, it is perhaps unnecessary to dwell on the great effects that such a change as that made here in our early life must have had on medical education; at any rate, our example has been followed by others.

The teaching of medicine is no light task, but so long as our teachers here are inspired by the same ideals as those that spurred on our founders, and so long as they faithfully follow them there is every reason to hope that with the enormously improved equipment of the present the successes of the future may be even greater than those of the past.

MEDICINE AND THE LAW.

Vaccination Register: Landlord's Right to Inspect.

AN unusual point of vaccination law came before the King's Bench Division at the beginning of this month. The governors of the Peabody Donation Fund, incorporated by Royal Charter in 1900, own blocks of working-class dwellings in various parts of London and are authorised to impose regulations, terms, and conditions on the occupation thereof. The governors have made it a condition of every tenancy granted by them that every member of the tenant's family should be vaccinated. In order to find out whether the condition was being obeyed, the superintendent of the Peabody estate at Southwark asked to be allowed to inspect the vaccination registers but was refused permission by the Southwark guardians. The point had previously arisen in 1913 when a tenant made a statutory declaration of conscientious objection. On that occasion the vaccination officer informed the superintendent of the Peabody buildings and the tenant was consequently given notice to quit. The tenant thereupon complained to the President of the Local Government Board (the predecessor of the Minister of Health) who seems to have expressed the opinion that the vaccination officer had exceeded his duties. Acting on this opinion the Southwark guardians refused the information in the present case, being themselves inclined to the view that it was not proper to allow the vaccination register to be searched for the purpose of putting pressure upon a tenant. They at the same time expressed their desire to carry out the law and to act in any manner which the court might direct.

The law is to be found in Section 24 of the Vaccination Act of 1867, which says that every registrar must keep a book in which he shall enter minutes of the notices of vaccination given by him and shall also register the certificates transmitted to him; the section declares that he is to allow searches to be made at a specified fee. This seems clear enough, and the only way in which the Southwark guardians could suggest that the right of inspecting the register had been taken away was by arguing that, because by later enactments the form of the register has been changed or extended, therefore Section 24 has been impliedly repealed. It is true that Section 2 of the 1898 Act provided that a parent might exempt himself from penalty by delivering to the vaccination officer a certificate of conscientious objection, and that this provision was further altered in 1907, so that the conscientious objector need merely send a statutory declaration instead of a magisterial certificate. But, as Lord Hewart has now observed, the original section of the 1867 Act remains substantially undisturbed. The certificate of successful vaccination—the foundation of the section—remains; the other certificates as to unfitness for vaccination and insusceptibility to vaccination also stand, and the name of the medical practitioner is preserved as it always was. The only new ingredient was the 1898 provision relating to conscientious objection, and it was a desperate argument to suggest that this had so altered the 1867 Act as impliedly to repeal Section 24. The three judges forming the court unanimously upheld the right of inspection and made absolute a rule *nisi* for *mandamus* directing the vaccination officer or officers of the Southwark guardians to show case why search of the register should not be allowed.

Nuisance from Noise.

Two motions for injunction to restrain nuisance from noise in London came before the Chancery Division on May 6th. In one case the Strand Hotel Ltd. applied to stop the use of a pneumatic drill in excavation operations on the site of Oddenino's Restaurant between 9 P.M. and 7.30 A.M. The action was settled on the terms of the injunction applied for except that the hour of 9 P.M. was altered to 10 P.M.; the motion was treated (as often happens in the Chancery Division) as the trial of the action, and there was no order as to costs. In the other case the Duke of Westminster applied for an injunction to restrain a defendant from leaving motor-cars (or permitting them to be left) standing in mews near Belgrave-square with engines running, from blowing horns or hooters without reasonable cause, and from doing any other thing which might cause nuisance, damage, inconvenience, or disturbance to tenants and occupiers of adjacent properties. The defendant was a sublessee of premises used as a motor garage with living rooms above; the subdemise contained the usual covenant against anything which might cause nuisance, inconvenience, &c., to the neighbours. Seven adjoining occupiers had complained; it was said that people arrived at the premises at early hours in the morning and allowed their car engines to race noisily. Mr. Justice Clauson granted an injunction until trial of the action.

Nuisance from noise is a matter in which hospitals and nursing-homes have a keen interest. Although the noise of railways and trams, the ordinary roar of traffic and the established sounds which assail the ear in an industrial district may have to be borne without remedy, the law will give some protection against the use at night of imported nuisances such as the pneumatic drill.

Sale of Dentist's Practice: Allegation of Fraud.

For the second time the jury have disagreed in the action brought by Mr. Mervyn A. Holland, of Upper Brook-street, against Mr. Cameron R. Stewart, of St. Andrew's-road, Surbiton, for alleged fraudulent representation on the sale of a dental practice. The plaintiff is thus at liberty to bring his action a third time. During the course of the recent hearing the plaintiff was questioned as to the scale of his charges. "What scale do you charge King's Counsel?" asked Mr. Justice McCardie. "It is what they are charging me that is worrying me, my lord," replied the plaintiff. One need hardly point out that cases of this kind suggest that some method of arbitration would be more satisfactory, and would more easily avoid undesirable publicity and obtain the desired finality as well as being less expensive than protracted and inconclusive hearings before a judge and jury.

The case for the plaintiff was shortly that the defendant told him the practice was capable of producing £2000 a year, that he therefore bought it for £2000, and eventually found that the total value of the patients who came to him from the plaintiff was less than £900. It was suggested that some of the names on the books were those of patients who had consulted Mr. Stewart as long ago as 1908 and then only once, and that other names were those of members of the Canadian Expeditionary Force who returned to their own country after the war. The case for the defendant was a denial of misrepresentation; he maintained that whatever he told Mr. Holland was true or that he (Mr. Stewart) believed it to be true; he contended that Mr. Holland relied on the reports of his accountants who had examined the books of the practice. The defendant, in answer

to the judge, said the plaintiff had never asked him to specify the number of "live" patients in the practice; he added that no man on earth could pin himself down to a definite figure in this connexion. On the third day of the present hearing the jury, after retiring for over two hours, said they found a verdict for the plaintiff and assessed the damages at one farthing. The judge pointed out that this would hardly do; if there was any damage at all, it was indisputable that the amount of damages must be substantial. After his lordship had explained the law again to the jury, a juryman stated that they had reached their verdict in the endeavour to avoid placing on Mr. Stewart the stigma of fraud and in order to come to a final decision. Asked if the jury would like to retire again, a juror replied that further discussion was useless. "A number of us," he said, "object to finding that the defendant intentionally acted fraudulently; we believe that this practice was arranged to be bought in some private conversation between the plaintiff and the defendant which has not been disclosed in court because it was under the seal or secrecy of freemasonry." Whatever the justification for this unusual comment, the jury were held to have disagreed and they were, therefore, discharged. The defendant has the satisfaction of knowing that on the allegation of fraud (which every professional man must resist with his last penny) the jury were not prepared to find against him; but he has the uncomfortable uncertainty of not knowing whether these protracted proceedings will again be renewed.

PHYSIOLOGICAL SOCIETY.

THE JUBILEE DINNER.

THE jubilee dinner of this Society, held on Friday evening, May 13th, at the Hotel Metropole, London, under the chairmanship of Sir EDWARD SHARPEY-SCHAFER, was a highly successful function. The proceedings were prolonged till the approach of midnight, and the speeches, if discursive, were informing as to the growth of the science, from its infancy in Victorian days to its present proud position.

After the loyal toasts the prosperity of the Society was proposed by Major WALTER ELLIOT, M.P., D.Sc., who rapidly traced its growth through 50 years of steady evolution, recalling to memory, among the famous men of old, Sharpey, Pye-Smith, Dew Smith, Burdon-Sanderson, Michael Foster, and David Ferrier, Thiselton-Dyer, Ray Lankester, and the Chairman himself, four among the pioneers who still were with us. And with them he coupled Lord Balfour, the President of the Council, as of similar philosophic attainments. Speaking as one who had left the Arcadian paths of science and declined into Parliamentary life, he painted the joys of those who were privileged to be working for the revelation of secrets whose wonders were certainly to surpass the wonders already laid bare, as the apparently logical framework of the past was upset by modern objectives.

Sir EDWARD SHARPEY-SCHAFER, in reply, pointed to the history of the Society and the character of the present meeting as proof that the aims of a small dining club, founded in 1876, had had a wonderful fulfilment. The club had been started by a group of biologists in order to defend their studies against the attacks of ignorant humanitarians, which were resulting in giving to France and Germany a clear pre-eminence over British scientists. The first forward movement in physiological education came, he said, from Burdon-Sanderson, a physician, and Sharpey at University College, London, assisted by Michael Foster, a young man imported from general practice in Huntingdon. Then came Humphry at Cambridge, an anatomist who recognised the sterility of anatomy uninformed by biology. The dinner meetings, from which the Physiological Society took its origin, were organised by Burdon-Sanderson, and the club was at first limited to the 19 persons who responded to some 40 invitations, of whom, as they had been told, four still survived. From this movement, designed to further physiological research and to enter into international relations for that purpose, the Physiological Society had sprung.

The guests were proposed by Sir CHARLES SHERRINGTON, who welcomed especially the visitors from abroad, and hoped they would not be disappointed at receiving a more material welcome than would have been represented by physiological papers. He coupled with the toast the names of Sir Ernest Rutherford, President of the Royal Society; Prof. Giulio Fano, from Rome, Prof. E. Gley, from Paris, and Viscount Knutsford, Chairman of the Research Defence Society.

Sir ERNEST RUTHERFORD said that the Physiological Society could be claimed as a child of the Royal Society, its founders and its eminent workers being almost without exception Fellows of the parent Association. Speaking as a physicist, he pointed to the multiplying and strengthening of the links between the two branches of knowledge as instanced by the researches, for example, of A. V. Hill, Einthoven, and Adrian, and said that such coöperation was leading to great developments in biological knowledge, and in future would produce even vaster results. Like the previous speakers he paid tribute to the loss recently sustained by science in the death of Starling.

Prof. FANO paid a tribute to England in terms which were warmly received. He spoke of English work not only at home but in our many colonies which he had visited, and showed himself a diligent follower of English literature as well as English science in his love of Dickens, Thackeray, Eliot, and Conrad, the Pole. He compared Dante, the great artist, with Shakespeare, the world's philosopher, some of whose supreme heroines were Italian women.

Prof. GLEY spoke warmly of the debt owed by all to English physiology for its accomplishments during the past half century. He recalled to the audience the loss sustained by the world through the untimely death of Victor Horsley, and concluded by an eloquent declaration that physiology was a truly international matter, and that all over the world those who sought out its truths did so upon common principles.

Lord KNUTSFORD spoke in unconventional vein. Reminded by a personal swimming incident, he called the attention of the meeting to the debt owing to the Chairman for his work in devising the technique for the restoration of the apparently drowned. He declared that he knew no hole, except a golf hole, that a physiologist could not get out of, and he wished that the House of Lords could receive the counsel of some physiologists as peers. He regretted, speaking for the Research Defence Society, that more medical men did not combine to refute the calumnies of the enemies of research.

The health of the Chairman was proposed by Dr. LEONARD HILL, and after a brief response from the chair, the evening closed with the singing of Auld Lang Syne.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

THE annual meeting of this Fund was held at St. James's Palace on May 13th. The PRINCE OF WALES (the President), who was in the chair, read a message from the King expressing appreciation for the work being done. The Prince of Wales went on to say that the ordinary distribution had been growing steadily since the Fund was founded 30 years ago by King Edward. In 1926, as in 1925, it amounted to £245,000 and to keep it at this figure at least £27,000 was needed in donations alone. Last year £17,000 had been received in two gifts of £10,000 and £7000, and this year one of the two donors, who for the fifth time preferred to be anonymous, had given £8000. Very nearly the whole of the Wells legacies (more than £200,000) had now been distributed, and these legacies had helped with 50 schemes, providing

about 1200 additional beds, of which 144 were beds for accidents. This was the second time the King's Fund had had a large sum of money at its disposal for helping the hospitals with schemes of extension and improvement. In 1920 £250,000 was entrusted to the Fund for that purpose by the Joint Committee of the British Red Cross Society and the Order of St. John, out of surplus war funds. Then, in 1924, munificent legacies were received from Mr. and Mrs. Wells. The need for hospital extensions was so great that the Red Cross money had been spent, and numbers of fresh schemes had come forward. Now, after another three years, the Wells legacies were practically exhausted, and still fresh schemes came on. It was his urgent desire that other generous donors, when they saw the enormous good done by the use of the Wells gifts, would be forthcoming to enable them to meet the new needs that were already in sight. It was really astonishing what a lot of money was subscribed under the voluntary system for hospital building schemes. The total in 1925 was no less than £691,000. Part of this was given in large sums by public-spirited individuals who became personally interested in the schemes of particular hospitals. Part of it came from gifts entrusted to the King's Fund to be distributed according to the knowledge which the Central Fund possessed of the relative claims of the different hospitals. The pensions scheme was an example of another function of a central fund. Assistance had been offered to the hospitals in London that had decided to adopt the scheme. The King's Fund would not itself take part in the administration, but gave the scheme its blessing and its help, believing it to be in the interests of the efficiency of the hospitals and the nursing service of the country. Just now the question of the provision of hospital accommodation for paying patients had come very much to the front, and he had appointed a committee of inquiry to go into the subject with Lord Hambleden as chairman, who would have as his committee two medical members, Sir John Rose Bradford and Mr. Warren Low, and two lay members, Sir Bernard Mallet and Prof. Winifred Cullis.

Lord REVELSTOKE (the hon. treasurer) said that the accounts showing the results of the year's working were rather better than had been anticipated, for the net receipts exceeded the estimates by nearly £5000. The receipts, less expenses, amounted to just over £240,000, while the amount of the ordinary distribution was £245,000. Further, the Fund distributed an additional £39,750 on account of the Wells legacies. The total amount distributed was therefore £284,750. During the 30 years since the King's Fund was founded it had distributed in all a total of somewhat over £5,500,000. The position of the invested funds was satisfactory. The market value of the investments on Dec. 31st last, £3,369,242, was now 3·1 per cent. below their book value—a very satisfactory result in view of the fact that a proportion of the securities was acquired more than 20 years ago, when the rates of interest ruling were extremely low.

On the motion of the Earl of DONOUGHMORE (chairman of the Management Committee), seconded by Sir BERKELEY MOYNIHAN, the annual report was adopted, and after a vote of thanks to the Prince of Wales, the proceedings ended.

LONDON HOSPITAL SATURDAY FUND.—The report for 1926 states that the income of the general fund was £79,192, almost the whole of which was derived from collections and donations. The income was somewhat reduced by the industrial unrest, and the present year already shows an increase upon the corresponding period of 1926.

WEST END HOSPITAL FOR NERVOUS DISEASES.—Speaking at the annual meeting of governors of this hospital, Lord Lascelles said that of the 517 patients who were admitted to the wards last year, 107 were cured and 413 relieved; only 35 showed no improvement. He expressed the hope that the institution would receive the means to undertake a thorough survey of the many mysterious and dangerous maladies connected with the nervous system.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Housing in Glasgow.

I WONDER if any English town can show, on any serious scale, a parallel to the Glasgow "backlands." (This term is locally pronounced as if it were two words each of equal accent.) A typical example is a four or five-story tenement facing the street with another similar tenement built perhaps 20 feet behind it. The backland is approached through passages in the front blocks, the lower floors can never get direct sunlight, and many of the rooms require artificial light all day. The rapacity of the early builders was uncontrolled by the municipality or Government, and the population of Glasgow increased so rapidly that its housing and rehousing now present a gigantic problem. At a summer school of social study held on the Gareloch, Dr. A. S. MacGregor, the medical officer of health for the city, said that in a group of streets recently surveyed 14 per cent. of the two-apartment houses were found to be harbouring two families. Some 3000 houses have been scheduled for demolition and the destruction of another 1000 is under consideration in view of their congestion, dilapidation, or dampness. In the older houses, especially in the east end of Glasgow, damp is very common.

At a recent official inquiry Dr. MacGregor stated that he had carefully studied the vital statistics of two of the scheduled areas. He found that, while the city death-rate was 14·8 per 1000, the Coalhill district death-rate was 24·7, and the Rumford-street death-rate 24·5. For the city as a whole the respiratory death-rate was 2·7; for those two districts it was 6. For the city as a whole the infantile death-rate was 107 per 1000 births; for Coalhill-street it was 174; for Rumford-street, 138. In Glasgow the populations at risk in these areas are large enough to give a high value to those death-rates. Usually, when such figures are adduced to justify a slum clearance scheme, the quantities are too small to be significant. But Glasgow can show a long series of these housing-health studies, and the cumulative effect of the figures is strongly in favour of the view that the incidence of death and disease is a real function of overcrowding. It has been held that the lower class of house attracts the feebler class of population and that the high death-rates associated with overcrowding are not due to mere aggregation but to natural selection of the weaker stocks. It is difficult, however, to accept this comfortable doctrine.

One fact brought forward by Dr. A. K. Chalmers, the late medical officer of health for the city, seems never to have been adequately investigated—namely, that the populations of one-room, two-room, and three-room houses are in a state of perpetual flow up *and* down. There is not a constant population in any one class of house. Yet it is found that the leading death-rates and disease-rates vary inversely as the number of rooms. In an over-crowded hospital ward we invariably get an increase of evil results due to mere aggregation, for with overcrowding the "other conditions" necessarily change. It is not unreasonable to expect the same ill-effects in over-crowded smaller houses where the hygienic conditions are almost always bad, especially in a great city. The problem is not one to be too dogmatic about, but I should expect medical officers of health generally to support the views implied in Dr. MacGregor's evidence.

Detection of Anthrax.

An important practical point has been raised at the Aberdeen County Council. In Scotland the English Board of Agriculture controls the contagious diseases of animals. It was said that of three cases of suspected anthrax in animals diagnosed by a local veterinary surgeon two had not been confirmed by the Ministry of Agriculture's experts. Insurance companies only paid on the verdict of the Ministry

and, therefore, great hardship was inflicted on farmers if the local veterinary surgeon said an animal died of anthrax and the Ministry denied it. It was agreed that in future swabs be sent to the local authority's veterinary inspector. Whilst no time must be lost in investigating a case of anthrax, it should be possible to make arrangements both for local diagnosis and central confirmation where necessary.

Official Recognition of Research.

It is worth noting that, during his research on spirochætal jaundice,[1] Dr. George Buchanan, in order to get direct access to his material, was appointed a Commissioner by the Scottish Board of Health, with power to make the necessary inquiries on the spot along with a medical officer of the Board. This is a good instance of how the work of the Medical Research Council's investigators can be correlated with administrative organisations.

The Empire Marketing Board has made a special grant of £2850 for the investigation of the food value of milk. An elaborate experiment is now going on under the direction of the Rowett Institute, Aberdeen, and a report will doubtless be published later in the year.

There is a good deal of discussion about the venereal diseases clauses in the Edinburgh Bill. The problem of how best to secure continued treatment is still unsolved. All that we can say at the moment is that the Edinburgh V.D. Department is one of the most successful in the country.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Medical Registration in the Free State.

THE Medical Practitioners Bill passed through all its stages in the Dail last week, and will probably have been finally dealt with by the Senate this week. Mr. McGilligan, the Minister in charge, moved two amendments which improved the Bill. He met the case that had been made to him on behalf of the two Royal Colleges, and agreed to give them separate representation on the Medical Council. He also provided that a casual vacancy in the direct representation should be filled by election and not by coöption. Mr. T. Hennessy moved an amendment to increase the number of direct representatives on the Council from two to four. The Minister was unwilling to accept this, but stated that the nominees of the Executive Council would be representative of the profession. Mr. Hennessy's amendment was withdrawn and the Minister carried a fresh amendment increasing the number of nominees of the Executive Council from one to two.

There was some discussion in the Dail about the anomalous position produced by giving separate representation on the Council to the several constituent colleges of the National University, while leaving the University itself unrepresented, but the Bill has gone through without change in this respect. It is unfortunate that there was not more time for consideration in the Dail, and it is hoped that the Senate may be able to do something to clear up an illogical position which, if left uncorrected, may hamper the working of the Council. As the Bill now stands, the constitution of the Council is based on two apparently incompatible principles—namely, representation of licensing bodies, applied in the case of Dublin University, the two Royal Colleges, and the Apothecaries Hall; and representation of teaching bodies, applied in the case of the university colleges at Dublin, Cork, and Galway. Under later sections of the Bill the Council is empowered to report to the Executive Council on the inadequacy of examinations and on the inadequacy of courses of study. The Executive Council, on consideration of such report, may, if it think fit, order that such examination shall cease to be a qualifying examination, so that the college or body which is responsible for an inadequate course of study loses its right to grant a qualifying diploma. In the former instance the body subjected to such order shall, for the time being, lose its right to representation on the Council. It is difficult to see in what way these clauses apply to the constituent colleges of the National University. As they do not grant diplomas they cannot be penalised by the suspension of that power, and at any rate their right of sending representatives to the Council remains. If they offend, the National University will be punished. One of these constituent colleges, that of Galway, is reported to have had only two entrants as medical students last winter session. It is clear that with so small an entry the continued existence of the school is in some doubt. It seems, however, that, even if the Galway school of medicine were closed, the College of Galway would, in the absence of further legislation, continue to send its representative to the Medical Council.

Registration of Dentists.

The Dentists Bill, 1927, was introduced to the Dail last week, but the President has announced that it is not his intention to press it in the present session. It follows fairly closely the lines of the Medical Practitioners Bill, in providing for the establishment of a Free State Dental Board and the maintenance of a Dentists Register. The relations of the Free State Dental Board to the [British] Dental Board, and of the Free State Register to the Dentists Register, appear to be parallel to those set up in the medical sphere. The Free State Dental Board is to consist of nine members, appointed as follows: One by the Executive Council, three by the Medical Council, one by the persons in the Free State registered under Section 3 of the Dentists Act of 1921, and four by dentists in the Free State otherwise registered. The Board is concerned with registration and discipline only, and does not appear to have any concern with education. Moreover, it only inquires into charges of infamous or disgraceful conduct when these charges are brought before it by a university or college having power to grant licences to practise dentistry. The right of medical men on the Register at the date of passing of the Act to practise dentistry is preserved, but future practitioners have their freedom curtailed. It is provided that Section 41, which contains a general prohibition of dental practice by persons not on the Dentists Register, shall not operate to prohibit—

> The performance of any surgical operation in connexion with the tissues of the mouth or jaws, or the giving of any dental treatment, advice, or attendance in urgent dental cases by any registered medical practitioner.

This clause is so ambiguous as to be dangerous, and in its meaning seems to be an unwarrantable interference with the privilege of medical men to practise any branch of medicine or surgery they think fit. It may be just as well that the Bill is not to be pressed at present, and that further time should be given for consideration.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The Press and the Medical Profession.

THE daily papers are becoming more and more inclined to publish photographs of medical men whose names are for some reason or other before the public, and at a recent meeting the Berlin Medical Society protested against this practice on the ground that it savours of advertisement. A resolution was unanimously adopted, charging members of the society to do their utmost to prevent newspapers from publishing their photographs and professional records. On the other hand, the Association of the German Press, which represents all the leading papers in Germany, resolved at its last meeting that its members shall henceforward refuse to publish

[1] See THE LANCET, May 7th, p. 985.

advertisements promising medical attendance by letter, advertisements guaranteeing cures for disease such as tuberculosis, cancer, and tabes, and advertisements recommending cures by astrology and other metaphysical methods. It will be a serious blow to quackery if the newspapers carry out this recommendation.

Health of the German People.

In a report submitted to the Reichstag, the Government states that the health of Germany has improved since 1924. The number of births has risen and the population is no longer decreasing. In 1925 the live birth-rate was 20·6 per 1000, compared with 20·5 in 1924; it is unsatisfactory, however, to find that in the first nine months of 1926, in the larger cities, for which reliable figures are already available, the rate was only 15·6, as against 16·4 in the same period in 1925. The general death-rate has fallen to 11·9 per 1000, being thus almost the smallest in Europe; but the infant mortality in Germany is much greater than in Denmark and Holland, the countries whose general death-rate is lowest. Notwithstanding the housing shortage, the mortality from tuberculosis has decreased in the larger towns. During 1925, moreover, there were no epidemics of major importance. The improvement in the public health is attributed to the arrangements for social relief and to the beneficial effect of sport.

Surgery and Diabetes.

Not long ago a paper dealing with operations upon diabetic patients was read by Dr. Rosenberg before the Berlin Surgical Society. Since the discovery of insulin, he said, the mortality of these operations has decreased from 50 per cent. to about 12 per cent. The principal danger is from coma and infection. In the Charlottenburg Hospital, between 1919 and 1922, seven diabetic patients were operated on, of whom three died from coma and one from septicæmia. Between 1922 and 1926 operations were done on 35 diabetics and there were 11 deaths; six of the cases were dealt with in the early days of insulin, when the technique was not yet fully developed, but in the later ones there was not a single death from coma. This good result was achieved by giving insulin in doses sufficient to remove sugar not only from the urine, but also (in excess) from the blood. If preparation begins several days before operation the prognosis is hardly worse in diabetic than in normal subjects. On the day of operation, and in the few days afterwards, it is necessary to give larger doses.

Supply of Human Milk to Infants.

In Magdeburg during the war the milk of mothers who had more than they needed was collected for the use of infants who were insufficiently fed. The quantity of milk delivered was some 80 or 100 litres a month, and the women were induced to deliver their milk by the offer of money and (what was then still more important to them) of food. In 1922 the system had to be abandoned because of the financial condition of the country; but recently it has been reorganised in connexion with a maternity hospital. A grant of M.5 per litre is made for the milk, whilst women of the better class, who decline to accept money, receive a certificate instead. The daily quantity of milk sent in is about 3 litres.

Hydrophobia in Germany.

In 1924 2423 cases were reported in Germany of people being bitten by dogs suffering, or suspected of suffering, from rabies. Of those bitten 41 developed rabies, as against 63 in the previous year. Treatment at the Koch Institute in Berlin was given to 504 people, whilst 371 were dealt with at the Institute of Hygiene at Breslau. Generally, cases of rabies are more frequent in the eastern provinces than in the west. The death-rate of people treated at the above institute was 1·4 per cent. in 1924, 0·5 per cent. in 1923, 0·9 per cent. in 1922, and 1·4 per cent. in 1921, whilst for people who did not receive such treatment the death-rates were 8, 8·1, 10·2, and 7·3 per cent. respectively.

Nutrition and Fertility.

The experience of the war suggests that nutrition has no influence on the incidence of multiple births. The number of these births underwent no significant change between 1909 and 1921, which includes, of course, the period of starvation during the blockade, nor was any alteration observed in the general fertility, although it is known that domestic animals whose food is supplied regularly reproduce themselves more quickly than wild animals of the same species.

State Insurance in Germany.

According to a statistical record of the German Insurance Office, 26,000,000 people in 1925 were compulsorily insured against accidents. In 107,571 cases—7 per cent. of which were fatal accidents—an insurance allowance was granted for the first time, the total amount being M.170,000,000. 16,500,000 people were insured against sickness and old age and 200,000 pensions were granted for invalidity—apart from 50,000 allowances for widows and 40,000 for orphans. The insurance offices themselves maintain 51 sanatoriums with 7161 beds for tuberculous patients and 47 sanatoriums with 5668 beds for other diseases. Twenty million people are compulsory members of sick-clubs, 9,500,000 cases of sickness being registered in 1925, compared with 7,500,000 in the year before. The average duration of disability due to disease was 25 days in industrial and 23 days in agricultural workers.

Agricultural Experiments with Iodine.

The good results obtained with iodine in the prophylaxis and treatment of goitre have led to an attempt to increase the iodine-content of vegetable foods. Experiments have been made at the agricultural institute of Hohenheim on the effects of adding iodide of potash to the Chile saltpetre used as a fertiliser, but it has proved impossible to increase the amount of iodine in the plants intended for human consumption.

New Light on the Death of Schiller.

Dr. Brauer states in an article in the *Zeitschrift für Medizinische Chemie* that the death of the poet Friedrich Schiller was probably caused by a green wallpaper. A piece of this wallpaper has recently been found and chemical examination shows that its colour was produced by Schweinfurt green, a dye containing arsenic. From correspondence between Schiller and Goethe it has been ascertained that it was Goethe who purchased the wallpaper for his friend and thus unwittingly caused his death. In 1886 the use of Schweinfurt green for wallpapers was strictly prohibited in Germany.

AUTUMN MEDICAL COURSES AT CARLSBAD.—The ninth series of International Medical Courses will be held at Carlsbad from Sept. 18th–24th, and free visas will be granted on application to persons attending these courses, either as students or lecturers. The newly built carbonic acid gas bath, which makes the sixth bathing establishment, contains ten cabins and a general room for dry baths, besides nine cabins and a general room for cold water treatments, as well as spacious roof platforms for sun and air bathing and rest cures.

DONATIONS AND BEQUESTS.—Mrs. Dowthwaite, of Aberdovey, has given £1000 to the building fund of the Dolgelley and Barmouth College Hospital.—Miss Violet E. Wills has given £18,000 to build, equip, and endow a nursing home at Partis College, Bath, for aged and infirm members of the institution in memory of her mother, Lady Wills.—Mr. Frank Harrison, a timber merchant of Boston, Lincolnshire, has given £20,000 to the endowment fund of the Boston Hospital.—Mr. Joshua H. Hoyle, of Todmorden, has given £1000 to the Yorkshire Council of the British Cancer Campaign.—The late Mr. Henry Folland, of Swansea, left among other bequests, £10,000 to the Swansea General Hospital and £1000 to the Swansea Institution for the Blind.—By will the late Mr. John Lindon, of Oxton, Birkenhead, left £1000 to Birkenhead and Wirral Children's Hospital and £1000 to Birkenhead Borough Hospital, in each case for the endowment of beds bearing his name.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

OPTICAL PRACTITIONERS (REGISTRATION) BILL.

Mr. WEST RUSSELL, in moving the second reading of the Optical Practitioners (Registration) Bill on Friday, May 13th, said that while there might be a considerable difference of opinion in regard to some of the details there were, he thought, few hon. Members who were not in complete accord with the broad principle upon which the Bill was based. He believed that this was the only country where there was no legislation for the registration of opticians. It might be that as a result of that legislation the people of the United States of America were probably the most bespectacled people in the world. That was not because the eyesight of the people in the United States was more deficient than that of the people of this country, but it was because the people of the United States had long since realised that good eyesight was of enormous national importance. He thought he was right in saying that at the present moment in this country among adults as well as among children there were more spectacles worn than was the case some years ago, not because the eyesight of the people was worse, but largely on account of the voluntary efforts on the part of opticians to cope with the problem. The same principle as that which was embodied in this Bill was also embodied in many Acts of Parliament dealing, for example, with dentists, nurses, and midwives. The principle of State registers had been in operation in regard to other professions for a considerable time, and had met with great success. He thought that it would be agreed that the work of opticians and the effect of it on the welfare of the country was a matter of national importance. It was said on good authority that at the present moment in this country something like 15,000,000 people, or about one-third of the population, were suffering from a measure of defective eyesight; and on statistics which he believed were vouched for there were in various industries some 4,000,000 people, suffering from short sight, disease of the eye, or some defect of eye construction; while in the report last year by the Board of Education it was stated that in that year alone something like 16,000 school-children were treated for squint. It was also stated that something like 24·8 per cent. of school-children suffered from defective sight. Until recently extraordinarily little was done to cope with this problem, and what had been done had been accomplished through the voluntary enterprise of the present Opticians' Council. Under that Council, and the Council of the Worshipful Company of Spectacle Makers, they had a registration of something like 3500 opticians of whose qualifications some guarantee was given. The course of training prescribed by the Council was very severe indeed. It was a training which enabled opticians not only to test the eye and to provide the spectacles that were necessary, but it also equipped opticians with a knowledge of the construction of the eye, and of the matters pertaining to it.

Ophthalmic Benefit.

There was another aspect of this question which was of very great importance. Under National Health Insurance there was what was known as ophthalmic benefit. In 1923 when it was first provided the position of the approved societies was very perplexing. There was no one to administer it and it was at that time that the Joint Council of Qualified Opticians was brought into being. Through that Council the approved societies were provided with qualified men who were able to carry out the work of administering this benefit. In 1923 something like £3000 was spent on ophthalmic benefit; in 1924, £17,000; in 1925, £24,000; and in October, 1926, there had been spent something like £63,000. This was a discretionary and not a statutory benefit, and one over which the Minister of Health had no control whatever. In the first five years of the National Health Insurance the surplus for distribution as ophthalmic benefit was something like £32,000 a year. There had been a second valuation and according to that there was a distribution of something like £420,000, which, taken over five years, amounted to a sum of £2,000,000 to be distributed for ophthalmic benefit. At the moment there was no real authority established by law for the control and direction of this large sum, but sooner or later some body, such as it was hoped would be created under this Bill, would be brought in to coöperate with the Ministry of Health in the distribution of this ophthalmic benefit. The object of this Bill was to register qualified opticians. There was already a very complete voluntary register and the Council already exercised very considerable disciplinary powers, but its work would be infinitely more effective if a status was given to opticians similar to that which had been given to dentists and others. There were a large number of quacks and vendors of spectacles who had neither the apparatus nor the ability to test sight, and naturally there was something of a vested interest there which would be affected by this Bill. There were also a large number of opticians who were not qualified, but who had had a long experience of this kind of work. They might have difficulty in satisfying the examination tests, but there was nothing in the Bill to prevent anyone who was carrying on the work of an optician from doing so. All it would do was to enable the public to distinguish between men whose qualifications were guaranteed by a responsible body, and those whose qualifications could not be vouched for. Power was given to this body to consider each case on its merits, and though certain unregistered opticians might not be able to pass the necessary examinations it was not by examination alone that their claim for registration would be decided. While the Bill would tend to eliminate all quacks and mere sellers of spectacles, who constituted a very considerable danger, it would at the same time create and register a body of men with a standard of qualifications and able to give a guarantee to the general public that they were able to carry out such work as sight-testing and spectacle-making.

Opposition to the Bill by Doctors.

The most serious opposition to the Bill came, as one would expect, from the medical authorities. Their opposition, as he understood it, was that a Bill of this kind would give to opticians a status that would rather suggest to the general public that the registered optician was capable and qualified to deal with all matters concerning the eyes. Defective eyesight came under various heads. First, there was the defect due to something in the construction of the eye, and that could readily be remedied by the provision of glasses. Secondly, there was the defect due to some disease or trouble not centred in the eye at all, but somewhere in the constitution of the individual. But the curious thing was that of this defective eyesight 95 per cent., it was said, was due entirely to error of refraction arising from some construction of the eye, and only 5 per cent. was due to some disease or other cause. The medical authorities, as he understood it, contended that the danger within that 5 per cent. was so great that while they might have a highly qualified optician able to test the eyes and prepare a prescription for glasses, and to provide the glasses, he would not have the training necessary to enable him to diagnose any trouble that might arise either from disease of the eye or other weakness in the constitution. While it was true that an optician might not be able to diagnose disease of the eye or the source of eye trouble, his training would enable him to detect it and to realise the cases that ought to be dealt with not merely by the provision of spectacles but ought to be passed on to some medical authority. Hon. Members must bear in mind that at the present moment a great deal of this work was being done by opticians and not by medical practitioners. He quite realised that in moving the second reading of this Bill the promoters were in some difficulty. There was a Departmental Committee sitting to inquire into the merits of this Bill. But he thought it would be a mistake if the time that was devoted to the second reading was altogether lost. He hoped that by the time this Bill reached the Committee stage the Departmental Committee would have reported.

Organisations Supporting the Bill.

Mr. ROY BIRD seconded the motion for the second reading of the Bill. He said there were two organisations interested in the promotion of this Bill. These were the British Optical Association and the Worshipful Company of Spectacle Makers. The latter, which was one of the ancient City Guilds, had specialised in teaching their members and those who were not necessarily liverymen of that company the practice of optics. These two organisations had joined together to form the Joint Council of Qualified Optical Practitioners. The number of members registered under that body was well over 3000. On the other hand, the number of medical men who appeared on the register of the British Medical Association as ophthalmic surgeons, or as possessing some special qualifications to deal with the eyes, was only 700. That number had to be subdivided, because only about 25 per cent. could really be described as ophthalmic surgeons. Fifty per cent. on the list were members of the medical profession who did not specialise in the treatment of diseases of the eye, but who had at some time held an appointment, or possibly written a paper, dealing with the eyes. The remaining 25 per cent. had no special qualification to deal with the eyes, or none which was shown in the Medical Register. The medical profession claimed that 700 men could deal with the care of the eyesight of the whole of the population of this country. Some very interesting figures were given during the inquiry of the Royal Commission on National Health Insurance as to the distribution of medical men over England. In 358 towns

there were only 397 qualified ophthalmic surgeons practising. If they took ten towns in the list which were health resorts and ten towns which were industrial centres they found that there was a very small number of ophthalmic surgeons in the industrial centres and that they were congregated either in the West End of London or in the big provincial towns, or in famous health resorts. Therefore, it was impossible to claim that the members of the medical profession who were qualified as ophthalmic surgeons could look after the whole community. In a great many towns there was no ophthalmic surgeon at all but there were qualified opticians, and he submitted that that was a very material consideration to bear in mind when they were considering what should be done in this matter.

An Amendment.

Dr. VERNON DAVIES moved the following amendment: "That this House declines to give a second reading to a Bill the subject matter of which is at the present time being investigated by a Departmental Committee." He said that he and the hon. Members associated with him desired to show the House how in their opinion this was a bad Bill, and one which it would be impossible to work. In recent years there had been rather an epidemic of applications for registration by organisations or societies of practitioners. He found from information that had been given to him that the Joint Council of Qualified Opticians consisted of a little over 3000 members. Yet there were 30,000 persons in the United Kingdom who obtained the whole or part their living from practice as oculists. He found that the organisations which held examinations and granted certificates were the College of Opticians, the National Association of Opticians, the Institute of Chemist Opticians, and the Joint Council of Qualified Opticians. The Institute of Chemist Opticians very unfortunately or presumptuously said that the Joint Council of Qualified Opticians had no right to speak for the rest of the profession. They even went so far as to say that they themselves were the only qualified people by statute among the lot and the only people who had passed a statutory examination.

Mr. ROY BIRD: The National Association of Opticians are supporting the Bill.

Dr. DAVIES said he had so far referred to only one organisation who disapproved of the Bill—namely, the Institute of Chemist Opticians. They were 5000 in number. But they had to look at the matter more or less from the point of view of public utility. Was there a need for a Bill for the registration of opticians, and, if so, were these the proper people to bring the proposals forward, and was it in the public interest? He had indicated that the promoters of the Bill had not the unanimous approval of the profession. They had not been able to get very much information that day as to what the qualifications of these gentlemen really were, or who decided as to the standard of the examinations. An ophthalmic surgeon of very long experience had remarked to him that he had never in the course of his professional life known any patient go into a spectacle shop and come out without spectacles. The medical profession had adopted a very definite attitude on this subject. They contended that the eye was an important organ, that training for the treatment of eye diseases called for special and prolonged study, and that even when a man was qualified, if he wished to qualify as an eye surgeon he ought, after qualifying, to undertake special work in connexion with the eye.

Mr. H. WILLIAMS: How long does the ordinary medical student devote to the study of the eye?

Dr. DAVIES said that speaking from memory the medical student attended a course of lectures, and in his time they had to make 30 practical attendances at the hospital. He (Dr. Davies) did not practise as an ophthalmic surgeon. To do that he would have been compelled after graduation to take a special course in the eye and would have had to hold a position as house surgeon in an eye hospital. It would be found that practically all the ophthalmic surgeons in this country had had extended post-graduate training in that capacity. It was said that this Bill would do little more than regularise what was the present practice. He differed from that. A body of unqualified men with a certain amount of training, which might be limited or otherwise, were asking for State approval of their profession by the grant of registration. If they were successful the public would believe that because they had received the approval of Parliament they must be competent to examine and treat eyes. That was a position which could not be maintained. He found that one college gave its degree or diploma for 50 hospital attendances, of which 25 at least must be devoted to the anatomy, physiology, and pathology of the eye. These three important subjects had to be learned in 25 lectures. Medical men said that that was an absolute impossibility, no matter how clever the student or how expert the lecturer.

Mr. COVE: Is not one of the purposes of establishing registration to improve the qualifications of these people and generally to raise the standard?

Dr. DAVIES said that was possibly so, and if a Bill were produced which merely set out definitely what the qualifications and training were to be it would have an additional claim on the attention of the House, but this Bill was vague and impracticable. The suggested Board was to consist of 12 members, one of whom was to be nominated by the General Medical Council. He did not think for a moment that the General Medical Council would nominate a member, as it would be outside their jurisdiction. Eight members were to be members of various optical societies, probably chosen by this joint board, but not giving any of the other organisations the right to be included. In two or three years probably the whole registration would get into the hands of this small joint council to the detriment of the rest of the profession. They knew that it had been the practice for a long time for most patients to go to opticians to have their eyes tested, and he believed that 90 per cent. of the eyes examined had no disease at all. It might, however, happen among the remaining small percentage that spectacles would be given to a man, or a drug would be put in his eye, which would do irreparable damage. The importance of the matter was increased by the fact that optical benefits were given by the approved societies, and the Minister of Health had to be certain that insured persons were getting efficient optical benefits with a minimum of danger. The great difficulty had been the shortage of ophthalmic surgeons and the very high fees charged which few insured persons could afford. The House might devote attention to the point whether there was any scheme whereby the claims of the doctors and of the opticians could be met. He said at once that if the opticians were satisfied with the purely refractive work there would not be a word to say against it; but the difficulty was that they claimed to be able to detect disease and to send on any case of disease for medical treatment. But the question was whether they would send on such cases. Sir George Berry, who would second the amendment, was an expert ophthalmic surgeon and he would probably tell the House from the medical point of view of the many dangers which were inherent in the present Bill.

The Medical Point of View.

Sir GEORGE BERRY said he seconded the amendment not because he had any personal interest in the matter, or any axe to grind, but because he was convinced that legislation on the lines proposed in the Bill would not be in the interests of the public. He admitted at once that there was no reason why the public should not be assured of the services of properly qualified opticians. In some way or other the public should be able to discriminate between the skilled optician and the less qualified or unqualified optician or unqualified maker of spectacles. At present there were different societies who examined their members and from whom they got the right to put certain letters after their names which indicated that they had undergone a proper test according to the requirements of the society. That ought to be sufficient in the public interest. The need for optical benefit was now very much better realised than it was a generation or two ago. At that time spectacles were considered to do harm to the eyes, and on that account even if they were required they were not used. Now the pendulum seemed to have swung rather in the opposite direction, and spectacles for which there might be only the flimsiest pretence of necessity were worn by a great number of people. In his experience, which was pretty considerable, he had never known a case where spectacles, however unsuitable, did any harm to the eye at all. Considerable discomfort might be caused by unsuitable spectacles, but there was no actual danger of serious injury to the eyes.

Lieut.-Commander BURNEY: The hon. Member has so much knowledge of this subject that I would ask him whether it would be true to say that if unsuitable spectacles were given to a person to correct, say, astigmatism, and he wore them for a year they would not increase the defect from which he was suffering?

Sir GEORGE BERRY said that without answering that specific question he did not agree that it would do any harm. On the other hand, spectacles if they were suitable were capable of doing a great deal of good. In that way they could cure squint and double vision, they could prevent headaches, and they could to a certain extent arrest actual diseases of the eye. That was the justification for the public having the services of opticians. But that did not justify the provisions of this Bill which were calculated to mislead the public and give them a mistaken and therefore undesirable sense of security. The public could not generally discriminate between ophthalmic benefit and optical benefit. Ophthalmic benefit was very much more complicated, even if they accepted the definition of the term optometry which was given in the Bill. Real ophthalmic benefit could be got now because under the National Insurance Act some of the friendly societies were referring their members to ophthalmic surgeons whose names had been given in a list from the Ministry of Health. A skilled optician was perfectly

competent to undertake the correction of optical defects, which was a simple matter, for the reason that it had been investigated by physicists, physiologists, and ophthalmic surgeons and involved a matter of skill which could be acquired in a few weeks or months. But the point of real importance was that the eye was not only an optical instrument which, curiously enough, was less perfect in some respects than the instruments which were produced by human ingenuity, though in other respects, of course, it was more perfect—but the eye was also a percipient sense-organ of most complex structure and functions, and it was associated with other organs of the body. It was for that reason that the eye was subject to so many defects and diseases. The optician might be able to know of the existence of these diseases, and perhaps to discriminate in some cases between defects due to diseases of the eye and optical defects, but he could not do so without being liable to make a good many mistakes unless he had the full training of a medical man. It was owing to the complexity of the eye that the medical curriculum of the universities and the different licensing bodies required the student to take up the study of diseases of the eye in the last six months of his course. Before doing so he had to study physics, physiology, pathology, and medicine, and it was only after the completion of those studies that he was able to understand all the functions or organic diseases of the brain, the spinal cord, and the sympathetic nervous system. Even then the doctor who wished to specialise in ophthalmic surgery had to undergo a very considerable training both in theory and in practice. Without failing in appreciation of the well-qualified optician's work he felt for the reasons he had advanced that it would be wrong to proceed with this Bill.

Defective Vision and Public Health.

After further discussion,

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) said that they were unanimous that the subject matter of this Bill touched very closely indeed the question of public health. They got a very fair indication of the extent of defective vision from figures which the Board of Education from time to time provided. In 1913 it was estimated that not less than 10 per cent. of the children of school age suffered from defective eyesight, while in many areas the percentage was as high as 25 per cent. In 1920 the average proportion requiring treatment and observation among school-children was estimated at from 10 to 15 per cent., but in 1923 the figure was again found to be about 10 per cent. of children at the school-leaving age. In 1923 some 135,000 children were ordered spectacles. The proportion of children with defective vision to the total number of children inspected in 1924 was 11·1 per cent. and in 1925 the figure dropped to 10·2. Therefore the conclusion at which they might very fairly arrive was that the prevalence of defective sight among school-children was fairly constant and was about 10 per cent. Last year there was a slight improvement, but he did not know whether they could attach any importance to the figures. If they applied these figures to the population generally, and made certain allowances for age and occupation, they could roughly estimate the number of persons with defective sight in England and Wales as about 1 in 5. If that was so there were probably about 8,000,000 people in the country who were affected. The general conclusion he should come to from the discussion that had taken place was that undoubtedly there was a case for something to be done, but there was considerable divergence of opinion as to the manner in which the problem should be approached, particularly from the point of view which had been advanced by the medical profession. It was true that the doctors had urged with a certain amount of weight that there was an appreciable percentage of cases in which great harm might be done by an optician. How far that argument was valid could only be ascertained by a full investigation of the facts. The question which they had to face that day was whether in so difficult and complex a matter it was safe to give a second reading to this Bill, or whether it would not be better to leave it to the judgment and recommendation of the Departmental Committee. He appealed to the promoters of the Bill under the circumstances to be content with having presented their case to the House and the country and leave it to the Departmental Committee which was a very excellent one. The Chairman of the Committee told him that they were already making progress and were ready to come to an impartial judgment on the whole situation.

Mr. RUSSELL said in view of the statement made by the Parliamentary Secretary to the Ministry of Health, which would be appreciated by the promoters of the Bill, he asked leave to withdraw the measure.

Dr. DAVIES withdrew his amendment.

Objection was taken to the Bill being withdrawn, and after some further discussion the motion for the second reading was put and negatived without a division.

HOUSE OF LORDS.

THURSDAY, MAY 12TH.

SCIENTIFIC RESEARCH.

Lord STANLEY OF ALDERLEY called attention to the Report of the Industrial and Scientific Research Committee. Among the subjects which the Report dealt with, he said, were such things as the preservation of food. It was highly desirable that they should not put such things into water-tight compartments confining it to the investigation of the problem as it arose in this country. He thought that the Committee had recognised the desirability of the question of the preservation and the maintenance of the quality of imported foodstuffs and other articles from the Dominions being investigated even more thoroughly than the easier problem of maintaining the purity and freshness of the foodstuffs produced in this country. He would like to learn from the Lord President of the Council (the Earl of Balfour) something of the operations of the Committee of Civil Research, which had been set up by the Government last year. It was made clear in the debate last year that the Committee of Civil Research was a link between the Dominions and the Mother Country.

The EARL OF BALFOUR (Lord President of the Council) said that their lordships had reason to be grateful to the noble lord for having called the attention of the House to one of the most important movements of the present day. It was a movement which had grown steadily for many years. The Committee of Civil Research was already doing an immense amount of very valuable and useful work. One of the subjects which had quite recently been under consideration was the tsetse-fly which was one of the most embarrassing scourges of Africa. It not only embarrassed agriculture and destroyed animal life, but it also destroyed human life. It affected many of our Dependencies, it blasted with its unhappy curse many areas, and it did not fall naturally under the purview of any department. For that reason it was exactly one of the subjects with which it was most desirable to deal through the Civil Research Committee. Another subject under investigation was that of the native diet in Africa, and another was the Empire supply of quinine. Hitherto quinine had been almost entirely derived, he believed, from certain of the Dutch colonies. There was no reason that they knew of why that absolutely essential drug should not be cultivated elsewhere and that was being made the subject of inquiry by the Civil Research Committee. The British Pharmacopœia, of which a new edition was urgently required, and which ought to be framed, and was being framed, as far as possible on lines suitable to the Empire, was also a subject which had come before the Committee. That Committee had no executive powers and no power to spend money. Any expenditure which their advice suggested was made on the responsibility of the Government as a whole and with the consent of the Treasury and the Chancellor of the Exchequer. The House must not for a moment suppose that the activities of this country in the way of scientific research were exhausted either by the Committee of Industrial Research or by the Committee of Civil Research. There was, for example, within the ambit of the Privy Council, the whole immense sphere of medical research. Of that he would say nothing that day, but that alone, if the House wished to hear anything about it, would require a debate to itself. The work of the Committee of Civil Research and of the Department of Scientific and Industrial Research was but a portion of the Government activities devoted to the great object of applying scientific discovery to the amelioration of the lot of mankind, and perhaps, he ought to add, to the power of one set of men to destroy another which, unfortunately, was also a subject of Government research in all countries of the world at this moment. In addition to the eight departments which were already in existence for the purpose of carrying out research, there would have to be, unless he was greatly mistaken, another body created to deal with river pollution. That was a subject which was rapidly beginning to cause considerable anxiety to the community from many points of view. It was a problem of great difficulty and importance and he believed that it would never be adequately solved without scientific investigation. When all had been done that could be done by legislation, and by rearranging, revivifying, or stimulating local authorities, unless they accompanied that improvement of machinery and organisation with an increased knowledge of how they were going to deal with the effluence of factories—of the new sugar factories, for instance—and of sewage, without destroying those industries, they would not satisfactorily solve the problem. They had to find some means of safeguarding the needs of their industries while at the same time purifying the water from the point of view of the water-drinker and the fisherman. That was a big problem with which science must deal. The noble earl, in conclusion, asked their lordships to realise the

enormous value of the practically unpaid work given by these great men of science to the solution of the problems which were put before them.

Lord STANLEY OF ALDERLEY thanked Lord Balfour for the very full reply which he had given to his speech, and still more for the great encouragement which the noble earl's speech would give to scientists.

HOUSE OF COMMONS.

WEDNESDAY, MAY 11TH.

Playing Fields and Public Health.

Mr. JOHN PALIN asked the Minister of Health whether his attention had been called to the shortage of playing fields in many of the cities and towns of the country; and whether, in the interests of public health, he would consider legislation to impose on local authorities the duty of making good this shortage.—Mr. CHAMBERLAIN replied: I am aware that more playing fields are required, although a good deal has been done by local authorities in recent years. They were given additional powers by the Public Health Act of 1925 and further legislation is not proposed.

Small-pox and Vaccination.

Mr. THURTLE asked the Minister of Health in how many of the cases of small-pox which have ended fatally this year vaccination had taken place.—Sir KINGSLEY WOOD replied: Since the reply given on this subject to the hon. and gallant Member for Chelmsford (Lieut.-Colonel Howard-Bury) on the 9th inst., a further death has occurred among patients suffering from small-pox. Of the 28 cases which have ended fatally this year, 21 were unvaccinated at the time when they acquired infection, while seven had been vaccinated in infancy. The ages of the latter at the time when they were attacked by small-pox were 22, 23, 44, 50, 54, 58, and 62 respectively.

Mr. HARRIS: Is the right hon. gentleman quite satisfied that the diagnosis proved conclusively that all these cases were small-pox?

Sir KINGSLEY WOOD: I have no reason to doubt the information I have received.

Mr. DAY: Can the hon. gentleman say whether any of these cases of small-pox were contracted abroad?

Sir KINGSLEY WOOD: That is another matter. The hon. Member had better put down a question.

Dr. WATTS: Is the hon. gentleman aware that the types of cases in the last few months have been more virulent than any we have had for some time?

Sir KINGSLEY WOOD: Yes, I have seen a statement to that effect.

Rheumatism in the Navy.

Sir BERTRAM FALLE asked the First Lord of the Admiralty the number of boys, second and first class, Royal Navy, at the training establishment, Shotley, who were admitted to sick-quarters and hospital suffering from rheumatism and kindred complaints during the years 1924, 1925, and 1926; and the number of boys and men under 21 years of age who had been invalided from the Royal Navy owing to rheumatism during the years 1925 and 1926.—Mr. BRIDGEMAN replied: The following numbers of boys, second and first class, Royal Navy, at the training establishment, Shotley, were admitted to sick-quarters and hospital for "rheumatism" and kindred complaints: In 1924, 20; in 1925, 11; in 1926, 13. The information asked for in the second part of the question is not readily available and its compilation would involve an expenditure of time and labour which I think my hon. friend would not consider justified in the circumstances.

Sir BERTRAM FALLE: Does my right hon. friend not think that some investigation should be made of these cases of rheumatism among first class boys?

Mr. BRIDGEMAN: They are kept under observation and the figures do not go to show that there is any increase.

Mr. T. WILLIAMS: Would it not be easy to ascertain how many men under 21 have been invalided as a result of contracting rheumatism?

Mr. BRIDGEMAN: I hope that the House will not insist on my giving these very detailed figures which may cause an increase in the estimates of my department.

Mr. T. WILLIAMS: Is not this a matter of such importance to the health of the men in the Royal Navy that we ought to have these facts and figures before us?

Mr. BRIDGEMAN: But we have a medical department who are very diligent in this matter and there is no prima facie evidence that there is anything wrong.

Mr. T. WILLIAMS: Are we to understand that the medical officers are satisfied that there are no extraordinary circumstances causing this unfortunate disability?

Mr. BRIDGEMAN: I certainly imagine that that is so. I shall be only too glad to investigate these cases.

Dr. VERNON DAVIES: Will the First Lord say how many of these cases were invalided out with heart disease?

Mr. BRIDGEMAN: I require notice of that question.

THURSDAY, MAY 12TH.

Difficulty in Summoning Public Health Nurses.

Mr. DAY asked the Minister of Health whether his attention had been called to the difficulty in summoning a public health nurse quickly in cases of emergency, as the majority of nurses were not subscribers to the telephone system; and would he consider installing telephones in the residences of all nurses engaged on this work.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the negative. As regards the second part, this is a matter for the consideration of the bodies by whom the nurses are employed.

Small-pox in England and Wales.

Mr. HARRISON asked the Minister of Health the total number of cases of small-pox notified in England and Wales during the last 12 months, and the number of cases that proved fatal.—Mr. CHAMBERLAIN replied: The number of cases of small-pox notified in England and Wales during the 52 weeks ended April 2nd, 1927, was 12,922. The number of deaths registered during the year ended March 31st, 1927, in respect of which small-pox was stated on the medical certificate as the cause, or one of the causes, of death was 33. Of this number 32 were classified to small-pox and one to cancer.

Mr. HARRISON: Will the right hon. gentleman consider the desirability of making regulations to enable the port sanitary authorities to inquire of persons whether they have come from small-pox infected areas and if so, their destination in this country for the next fortnight after arrival?

Mr. CHAMBERLAIN: The officers of my department are taking all steps which are practicable in the circumstances.

Mr. HARRIS: Are the officers of the department perfectly satisfied that all these cases are correctly diagnosed as small-pox? Are not some of the cases supposed to be chicken-pox or some other disease?

Mr. CHAMBERLAIN: There are people who would believe that a case of small-pox is anything but small-pox, but they do not include the officers of my department.

Lieut.-Colonel HOWARD-BURY: Is not vaccination the only preventive?

No answer was given.

Mr. GROVES asked the Minister of Health whether, in view of the fact that the small-pox cases removed to hospital from Hendon and Golders Green were originally reported as being very mild, he could throw any light on the fatal result in half of them.—Mr. CHAMBERLAIN replied: I do not know to what reports the hon. Member refers. I am informed that the first of these cases was relatively mild, but that most of the others were severe.

Birth Control.

Mr. THURTLE asked the Minister of Health if, in view of the resolution he had received from a recent national women's conference of one of the political parties represented in this House, in favour of birth control information being given in suitable cases at maternity centres, he proposed to reconsider his attitude on this matter.—Mr. CHAMBERLAIN replied: I do not find that I have received any such resolution as that to which the hon. Member refers, but in any case the passing of such a resolution at a party conference would not affect my decision, the reconsideration of which, as previously stated, depends upon an expression of opinion by Parliament.

MONDAY, MAY 16TH.

Indian Prisoners and Tuberculosis.

Mr. THOMAS WILLIAMS asked the Under Secretary of State for India whether he would give the names of the prisoners detained under the Criminal Law Amendment Act of 1925 who had, or were, suspected to be suffering from tuberculosis; and whether the Government had under consideration removing these prisoners to surroundings more conducive to the restoration of their health.—Earl WINTERTON replied: The two persons in question are Jiban Lal Chatterjee and Subhas Chandra Bose. The former was removed to a sanatorium a month ago. I hope to be in a position to make an announcement about Mr. Bose in the course of the next two days.

New Site for London University.

Mr. TREVELYAN asked the President of the Board of Education whether the University of London had arranged to purchase the Bloomsbury site from the Duke of Bedford; what the terms of purchase were; and how much was being provided by His Majesty's Government and how much from other sources.—Mr. R. MCNEILL (Financial Secretary to the Treasury) replied: The answer to the first part of the question is in the affirmative, but I am informed that no contract has yet been signed. As the Chancellor of the Exchequer stated in November last, he promised in June, 1926, on behalf of His Majesty's Government, that they

would be prepared within certain financial limits to ask Parliament to make provision for improved accommodation of the University, subject to approval by the Treasury of plans to be formulated by the Senate. No official intimation has yet reached the Treasury, and I am at present unable to give any further information save that the amount which Parliament would be asked to provide towards the improved accommodation of the University would be approximately one-half the price paid by the Government for the Bloomsbury site, which was £425,000.

Poor-law Relief.

Mr. NEIL MACLEAN asked the Minister of Health the number of people in receipt of Poor-law relief in England and Wales in 1925 and 1926.—Mr. CHAMBERLAIN replied: The total number of persons in England and Wales in receipt of Poor-law relief, including lunatics in asylums, casuals, and persons receiving domiciliary medical relief only, on the night of Jan. 1st, in the years 1925 and 1926, was 1,205,267 and 1,439,810 respectively.

Canned Goods and Preservatives.

Mr. HURD asked the Minister of Health what classes and quantities of canned goods were imported into this country which, because of the presence in them of preservatives, artificial colouring matter, or for other similar reasons, were barred by law for use in the countries of origin.—Sir KINGSLEY WOOD replied: The Preservative Regulations, which prohibit or restrict the addition of preservatives or colouring matters to foodstuffs, are so drawn as to prevent the importation of articles which do not conform to their requirements, and my right hon. friend is not aware that any canned goods are imported into this country the sale of which is prohibited in the countries of origin for the reason stated in the question.

TUESDAY, MAY 17TH.

Small-pox in Durham.

Mr. BATEY asked the Minister of Health the number of persons who contracted small-pox in the county of Durham for the years 1924, 1925, and 1926.—Sir KINGSLEY WOOD replied: The figures are as follows: 1924, 20 cases; 1925, 1138 cases; 1926, 6645 cases.

The Use of Tins as Milk Containers.

Mr. MACQUISTEN asked the Secretary of State for Scotland whether, as small farmers and other milk producers who sold their milk out of barrels were now being ordained to use tins, which were less sanitary in summer, and the use of which caused the loss and compelled them to incur the cost of reconstructing their carts, he would suspend the order compelling them to use tins until their existing equipment had to be replaced.—Sir JOHN GILMOUR replied: I am advised that wooden vessels are not more sanitary in summer than the metal vessels used for milk, and that the practice of using wooden vessels for the sale of milk is not common in Scotland. The Milk and Dairies (Scotland) Order, 1925, which prohibits, from Jan. 1st last, the use of wooden vessels for milk except in the case of buttermilk, was issued nearly two years ago, and so substantial notice has been given. I see no reason to take any action to suspend or revoke the order on this point.

Registration of Illegitimate Births.

Mr. HORE-BELISHA asked the Minister of Health whether he had now made inquiries into the administration of the Legitimacy Act, 1925; and whether he had found it possible to ameliorate the present conditions and arrange that a certificate on re-registration should not be distinguishable from any ordinary birth certificate.—Sir KINGSLEY WOOD replied: My right hon. friend has considered this matter carefully. The arrangements for the re-registration of births under the Legitimacy Act, 1926, have been so framed as to render the entry indistinguishable from that of an ordinary legitimate birth wherever this has been possible without hardship to the parties, and it would not be possible to take any further measures without amending the whole of the general registration law. I may add with reference to the particular points which the hon. Member has in mind, that all entries of births registered after the expiration of 12 months are required to contain the words, "on the authority of the Registrar-General," and must bear the date on which they are registered.

WELLCOME HISTORICAL MEDICAL MUSEUM.—At 8.30 P.M. on May 24th Mr. Henry Wellcome will hold a conversazione at this museum for the Royal Anthropological Institute of Great Britain and Ireland. Prof. Elliot Smith, F.R.S., will give an address on the medical and magic nature of the anthropological collections in the museum.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdr. A. Craig to be Surg.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Maj. N. T. Whitehead is restd. to the estabt.

Capts. to be Majs.: R. R. Thompson, W. Russell, A. J. Hickey, G. S. Douglas, J. B. A. Wigmore, E. A. P. Brock, G. R. Grant, J. LaF. Lauder, F. G. Flood, J. J. Magner, J. McP. Mackinnon, H. S. Milne, G. F. Carr, J. H. Baird, F. Harris, H. R. Sheppard, D. W. Beamish, W. K. Campbell, F. M. Townsend, and P. J. S. O'Grady.

W. G. S. Foster to be Lt. (on prob.).

A. Nicolson to be Temp. Lt.

ARMY RESERVE OF OFFICERS.

Maj. A. L. Aymer relinquishes his commn. and retains the rank of Maj.

TERRITORIAL ARMY.

2nd Lt. H. V. Morlock, late Rifle Bde., to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Maj. J. Ramsay, from Active List, to be Maj.

INDIAN MEDICAL SERVICES.

Maj.-Gen. A. Hooton officiates as Director-General, vice Maj.-Gen. T. H. Symons on leave. Maj. R. V. Martin to be Superintendent, Nasik Central Prisons on relief by Maj. E. E. Doyle. Lt. G. A. S. Howatson, Civil Surg., from Mirzapur to Shahjahanpur. Lt.-Col. H. C. Buckley, from Shahjahanpur to Saharanpur. Lt.-Col. H. R. Nutt from Saharanpur to Allahabad. Khan Bahadur Dr. Tasaduq Husain, officiating Civil Surg. to Banda. Lt.-Col. H. W. Illius, Civil Surg. to Benares. Rai Bahadur Dr. Sham Manohar Lal, officiating Civil Surg. from Manda to Unao. Rai Bahadur Dr. Sarup Narain Mathur, Civil Surg., from Budaun to Fatehgarh. Lt. L. V. Jaensch, Civil Surg., from Garhwal to Gonda. Lt.-Col. R. W. Anthony to officiate as Surg.-Gen., vice Major-Gen. A. Hooton. Dr. P. L. Stallard, District Surg., Great Indian Peninsula Railway, to officiate as Principal Medical and Health Officer. Maj. M. N. Mehta to act as Civil Surg., Cochin. Maj. A. J. D'Souza to act as Resident Medical Officer, General Hospital, and Medical Officer in Charge of His Excellency the Governor's Bodyguard Dispensary. Lt.-Col. W. R. J. Scroggie to act as District Medical Officer, Superintendent, Medical School, and Medical Officer, Borstal School, Tanjore. Major J. B. Vaidya to act as District Medical Officer, Guntur.

The services of Maj. R. R. M. Porter have been placed temporarily at the disposal of the Government of Bihar and Orissa. Lt.-Col. J. C. H. Leicester has resigned his membership of the Bengal Legislative Council and Col. Godfrey Tate has been nominated to succeed him.

DEATHS IN THE SERVICES.

The death, from pleuro-pneumonia, is reported of Surg Lt.-Comdr. George Aubrey, R.N., at Hong-Kong. Appointed lieutenant in 1917, he saw active service during the war, and after being employed at Dunkirk in 1919 he went to Malta and was specialist in bacteriology and pathology at the hospital there. In 1922 he joined the *Ajax* in the Mediterranean, in 1923 he was with the submarine *Adamant*, and in 1925 was attached to the surveying ship *Kellett*. Promoted to Surg. Lt.-Comdr. in 1923, he had passed for Surg.-Comdr.

AMBULANCE CHALLENGE SHIELD COMPETITION.

The annual competition for the Territorial Army Ambulance Challenge Shield will be held at the Royal Army Medical Corps Headquarters, Upper Chorlton-road, Manchester, on Saturday, May 21st. Teams from the following Territorial Army Field Ambulance units will compete for the trophy: 125th (E. Lancs.), 128th (Wessex), 140th (County of London), 143rd (S. Midland), who are the holders, 158th (Welsh), 164th (W. Lancs.), 167th (City of London), and 170th Cavalry.

A MANCHESTER NURSES' HOME.—On Saturday last Princess Mary laid the foundation-stone of the new nurses' home of the Manchester Royal Infirmary, and afterwards visited Booth Hall Infirmary, where she unveiled name-plates on the pavilions.

Correspondence.

"Audi alteram partem."

MANIA AND DEPRESSION.

To the Editor of THE LANCET.

SIR,—Dr. Snowden's paper entitled the Psychological Treatment of Mania and Depression in your current issue will be read with great interest; but on perusing the cases he quotes it seems to me that the title he uses is a misnomer. Of the three cases described surely the first two would ordinarily be classed as examples of anxiety hysteria. On the one hand, both present common symptoms of that disorder, and on the other, several facts which have been brought out by Dr. Snowden seem to differentiate them from mania, as that term is understood in psychiatry. For example, of the first patient Dr. Snowden says that his restless condition made him acutely miserable and fearful of insanity. Neither of these symptoms is in any way characteristic of mania; in fact, taken together they would usually be considered to rule that diagnosis out of court. The second patient's fear of suicide, to name only one symptom, is similarly highly incongruous with the classical manic syndrome. If the third case be taken as an example of psychotic depression, as Dr. Snowden obviously wishes us to do, is it not true that this condition usually terminates spontaneously in recovery; and is there then any criterion by which we can judge of the effect of treatment in a single case?

With regard to a medico-legal point; if certifiable patients need not be certified, but are to be sent to nursing homes, it seems only fair that we should carefully warn the matrons of these homes that, if they receive our patients, they are liable to prosecution, and that possibly they may be mulcted in heavy fines.

I am, Sir, yours faithfully,

T. A. ROSS.

The Cassel Hospital for Functional Nervous Disorders, Penshurst, Kent, May 14th, 1927.

THE SURGERY OF HERNIA.

To the Editor of THE LANCET.

SIR,—In reading the very interesting Hunterian lecture on Recent Advances in the Surgery of Hernia, by Mr. Ernest M. Cowell (THE LANCET, March 5th, p. 479), I remembered seeing the late Prof. O. Witzel, of Düsseldorf, do filigree operations for the closure of large herniæ when I visited his clinic (at that time at Bonn) in 1899. His teacher, Prof. Trendelenburg, had some years earlier (1890) closed the large aperture of a scrotal hernia by the insertion of a disc of fresh bone and later on had repeated these operations, using flaps of bone covered with periosteum. His assistant, Goepel, began in 1897 to use silver filigree instead of bone plates, but he only published his results in the *Centralblatt für Chirurige*, No. 17, of 1900, after Witzel had described his method in No. 10 of the same year. I was so struck by the utility of the method that I at once adopted it and did quite a number of these operations at the German Hospital in London, at first making my own filigrees and later on using ready-made filigrees sold by Otto Möcke, of Leipzig. In later years I have used more frequently free fascial grafts but even now sometimes find the filigrees very useful.

I think Mr. Cowell cannot be right in saying that Celsus practised herniotomy, as he was not himself a medical man but a lay writer who collected and published the medical knowledge of his time.

I am, Sir, yours faithfully,

J. P. ZUM BUSCH.

Kantonsspital Liestal (Switzerland), May 10th, 1927

THE MASTOID ANTRUM IN THE CHILD.

To the Editor of THE LANCET.

SIR,—In their account last week (p. 1024) of a case of facial paralysis of aural origin in a 7 weeks' infant, Dr. Hobhouse and Mr. Marshall write: "Considering the negligible size of the mastoid antrum at this age, the locality in which so large a quantity of pus was contained is rather difficult to determine." The mastoid or tympanic antrum at this age is not negligible in size. On the contrary, it is fully developed at birth and is not only relatively, but actually, as large as the adult antrum. The tympanic antrum of a 7 weeks' old infant will hold pus "in sufficient quantity to fill the external meatus" several times over.—I am, Sir, yours faithfully,

F. PEARCE STURM, M.Ch.,
Aurist and Laryngologist, Leigh Infirmary, Lancashire.

May 16th, 1927.

THE RÖSE-GOTTLIEB METHOD OF MILK ANALYSIS.

To the Editor of THE LANCET.

SIR,—In an article on dried milk in your issue of April 23rd (p. 878) it is implied that the Röse-Gottlieb method for fat estimation gives results which are too low when used with dried milk, and could only be expected to give satisfactory results with liquid milk. May I point out that if the essential conditions of the Röse-Gottlieb method are complied with—i.e., that the dried milk must be completely dissolved, and the reagents added in their proper order—the method is most reliable and exact for all milk products including dried milks. I published a paper on the essential details in the *Analyst*, 1908 (p. 389) and have since repeated them in "Dairy Chemistry," second and third editions, and in the "Laboratory Book of Dairy Analysis," second and third editions.

I am, Sir, yours faithfully,

Nottingham, May 13th. H. DROOP RICHMOND, F.I.C.

THE PREVENTION OF SCARLATINAL NEPHRITIS: A CORRECTION.

To the Editor of THE LANCET.

SIR,—In your report (THE LANCET, May 7th, p. 971) of a contribution read by Dr. H. Carter and myself before the Medical Section of the Royal Society of Medicine on April 26th on this subject, there is an error in the dosage stated—"0·90 g." should read "90 gr." a day. This dose certainly represents the *minimum* amount of alkali per diem which has proved to be to some extent effective in preventing the development of albuminuria and nephritis in scarlet fever. The incidence of these complications was reduced from 5·5 per cent. in the control cases to 0·6 per cent. on this dose. A larger dose might possibly afford absolute protection but this point is still being investigated. Until further evidence is obtained it is therefore impossible to state whether or not alkalis will prove to be completely protective and, if so, in what doses.

I am, Sir, yours faithfully,

London, May 9th, 1927. A. ARNOLD OSMAN.

THE ORIGIN OF LEUKÆMIA.

To the Editor of THE LANCET.

SIR,—In an attempt to investigate the origin of leukæmia (lymphatic and myeloid) I have come across some evidence to connect it with (*a*) shock or nervous exhaustion, and (*b*) malaria. This may, however, be a coincidence, and as the references in the literature of the subject are very scanty, I should be grateful to any of your readers if they could let me have notes of any cases in which either of these factors appeared to be concerned with the subsequent onset of leukæmia. The length of the interval is important.

I am, Sir, yours faithfully,

Bedford-sq., W.C., May 16th. A. KNYVETT GORDON.

RADIOGRAPHY IN THE TREATMENT OF FRACTURES.

To the Editor of THE LANCET.

SIR,—Enclosed I am forwarding you a copy of a letter which the Todmorden Medical Society are submitting to the Medical Defence Union.

I am, Sir, yours faithfully,

C. LEONARD WILLIAMS,
Hon. Secretary, Todmorden Medical Society.

Roomfield, Todmorden, May 16th, 1927.

[ENCLOSURE.]

DEAR SIR,—The Todmorden Medical Society views with apprehension the attitude of the Medical Defence Union as expressed in and by their recent circular letter adverting to radiography in the treatment of fractures.

This circular letter must prejudice the case of any medical man who may be sued by an aggrieved patient, the subject of a fracture, if the practitioner has not obtained a radiogram, notwithstanding any circumstance which may have enabled the practitioner in the exercise of his discretion to dispense with such a radiogram, and notwithstanding any difficulties or dangers which might have been incurred in obtaining any such X ray report.

This prejudice you have achieved by your letter throws on any defence the obligations of proving in any case as a matter of necessity that any such omission is justified either by the rightful discretion of the practitioner or by the special circumstances in which he acted, and establishes an atmosphere in which any such practitioner is pre-judged negligent until he has proved to the contrary. For this legal disability medical men are indebted to the Medical Defence Union.

Your letter, too, by laying down a principle of such a nature must in no small measure enlarge the discretion of your executive in denying liability to support a certain number of defences, and to this extent diminishes the liabilities for which practitioners, not without some reasonable justification, may consider themselves covered by you.

Your policy also of creating amongst general practitioners a spirit of dependence in which they rely essentially on the ancillary medical services, re-acts adversely on the best interests of general practice.

These ancillary services are invaluable in their place but the policy you have adopted is far wider than the specific recommendations you have made, and if pursued by making medical men into retail purveyors of X ray, biochemical, bacteriological, and other reports, must tend to diminish the interests of the general practitioner adversely, to the interests of the public.

Situated as we are in Todmorden radiography is a possibility only where special circumstances indicate the necessity.

Our attitude to the question is therefore the antithesis of yours which we claim is bad in principle and inapplicable to the circumstances of the area we serve and of many other localities, too, where the population is scattered and sufficiently far removed from the available special services to make their application always difficult, sometimes a danger.

We beg leave to submit the publication of your circular was an indiscretion, and beg to ask you what you propose doing in the circumstances, particularly with reference to your future policy, please.

Yours faithfully,

(Signed) C. LEONARD WILLIAMS,
Hon. Secretary, Todmorden Medical Society.

April 21st, 1927.

*** The letter of the Todmorden Medical Society, which we are invited to publish, introduces a subject of importance. It is a duty of the great majority of the medical profession to join one of the protection and defence associations, and the attitude of the Medical Defence Union has the sympathy of the London and Counties Medical Protection Association. The difficulties, however, are recognised of absolute adherence to any rule that photographs must have been taken in certain cases. Protection and defence corporations act strictly in the interests of their clients, though all will sympathise with the fine professional attitude taken up by the Todmorden Medical Society. Where the practitioner can show that the difficulties in obtaining a safeguard (in the patient's interests as much as in his own) were material, a jury, when a quarrel arose, would certainly take that fact into consideration; but a jury might not regard the facts in the same favourable way if the safeguard had been withheld upon professional grounds. It is common prudence for any practitioner, who has a case to deal with when an X ray photograph would throw light upon the circumstances, to suggest to the patient, or to those responsible for the patient, that such a procedure should be followed. It need hardly be said that if the patient, directly or indirectly, is responsible for the omission to take the photographs, any charge of neglect brought against the practitioner falls to the ground.—ED. L.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An extraordinary Comitia of the College was held on May 12th, when the following were admitted to the Fellowship:—

Drs. W. S. Paget-Tomlinson, George Hall, D. E. Core H. P. Newsholme, A. W. Stott, Prof. G. H. Monrad-Krohn Dr. T. H. G. Shore, Maj. V. B. Green-Armytage, Surgeon Rear-Admiral R. St. G. S. Bond, Drs. M. Davidson, T. Izod Bennett, E. Mapother, C. F. T. East, and Prof. H. MacLean.

Under By-law XXXVIII (*b*).: Dr. Andrew Balfour and Sir Squire Sprigge.

The Registrar reported the acceptance of the post of junior standing counsel to the College by Mr. C. Stafford Crossman, and that of delegate to the third Imperial Social Hygiene Congress by Dr. S. W. Wheaton.—A letter from the secretary of the Medical Research Council, regretting the inability to resume publication of *Medical Science Abstracts and Reviews*, was read.—Dr. L. S. T. Barrett was appointed the delegate of the College to the thirteenth annual conference of the National Association for the Prevention of Tuberculosis.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council held on May 12th, Sir Berkeley Moynihan, the President, in the chair, Mr. C. F. Beadles and Sir Henry Gauvain were admitted to the Fellowship. The diploma of Fellow was also conferred on Mr. G. F. Gibberd and Mr. A. J. Wrigley. Mr. E. Miles Atkinson received the Jacksonian Prize for 1926 for his essay on the Pathology, Diagnosis, and Treatment of Abscess of the Brain. Mr. H. C. Malleson received the John Tomes prize for 1924–26 for his work on the Histology and Pathology of the Dental Tissues. Mr. R. G. Wilbond signed the roll of Begley students.—The President reported that the new by-laws had been approved and signed by the Secretary of State for Home Affairs, the Lord Chancellor, and the Lord Chief Justice.—Diplomas of M.R.C.S. were conferred upon 163 candidates (135 men and 28 women) whose names were published in THE LANCET, May 7th, p. 1005.

The *Jacksonian Prize* for 1927, which is of the value of £19 10*s.*, will be awarded for a dissertation on the Pathology, Diagnosis, and Treatment of Bronchiectasis and Abscess of the Lung. The subject for 1928 will be the Surgical Treatment of Pulmonary Tuberculosis. Candidates must be either Fellows or Members of the College, and the essays must be submitted by Dec. 31st. Further particulars may be had from the secretary.

UNIVERSITY OF LONDON.—Mr. Walter George Spencer, consulting surgeon to the Westminster Hospital, has been elected to the Senate as medical representative of Convocation. Like all the other successful candidates for election, Mr. Spencer was the nominee of the University of London Graduates' Association, of whose council he is a member.

University College.—An address on Lord Lister and the Romance of Surgery will be given at the College on May 23rd, at 5.30 P.M., by Mr. Raymond Johnson. Dr. A. M. H. Gray will preside.

St. Mary's Hospital Medical School.—There will be a distribution of prizes by Field Marshal Lord Allenby on Wednesday, June 8th, at 3 P.M.

London Hospital Medical College.—On Wednesday, June 29th, at 3 P.M., Lord Eustace Percy, M.P., President of the Board of Education, will distribute prizes in the College Library.

MEDICO-LEGAL SOCIETY.—An ordinary meeting of this Society will be held at 11, Chandos-street, Cavendish-square, London, W. 1, on Thursday, May 26th, at 8.30 P.M., when Sir Lenthal Cheatle will read a paper on Some Medico-Legal Aspects in the Fracture of Bone. A discussion will follow. Members may introduce guests to the meeting on production of a member's private card.

EVELINA HOSPITAL FOR SICK CHILDREN.—There were 61,000 attendances of out-patients at this Southwark hospital last year; the in-patients numbered 700.

ROYAL INSTITUTE OF PUBLIC HEALTH.—The general and sectional programmes of the Institute's congress at Ghent, Belgium, from June 1st to 6th, have now been issued, and may be obtained from the hon. secretaries at 37, Russell-square, London, W.C. 1.

UNIVERSITY OF MANCHESTER.—About £5000 has been received from an anonymous donor to endow two post-graduate scholarships for research in biology.—The Dauntesey Medical Senior Scholarship has been awarded to W. W. Kay.

MILFORD SANATORIUM.—Lord Ashcombe, Lord-Lieutenant of Surrey, last week laid the foundation-stone of the central block of the Surrey County Sanatorium at Milford, near Godalming. The institution will accommodate 300 patients, and the cost, exclusive of the site, will be nearly £200,000.

LAMBETH GENERAL LYING-IN HOSPITAL.—Last year there were 991 in-patients, who contributed £1357 from their "maternity benefits." Under the terms of its lease the hospital is bound to build a new nurses' home, which will cost £40,000; plans have been prepared for its erection, but the money has yet to be raised.

INSTITUTE OF HOSPITAL ALMONERS.—A meeting will be held at the Grotrian Hall, Wigmore-street, London, on Thursday, May 26th, at 5 P.M., when Sir John Rose Bradford, Sir Berkeley Moynihan, Sir Arthur Stanley, and Dr. A. C. E. Gray will speak on Hospital Social Service. A limited number of invitation cards may be had from the secretary of the Institute at 296, Vauxhall Bridge-road, S.W. 1.

DEATH UNDER ANÆSTHESIA.—The accidental use of a mixture of carbon dioxide and oxygen, in the proportion of 80 parts carbon dioxide to 20 parts oxygen, was responsible for a death under anæsthesia at St. Bartholomew's Hospital on May 11th. The mistake occurred when the anæsthetist, proposing to induce with gas and oxygen, turned on a cylinder containing carbon dioxide instead of the one containing nitrous oxide. At the inquest held on May 14th by Mr. Danford Thomas it was stated that the carbon dioxide cylinders are painted green down the sides, but black on the top, and the anæsthetist had been standing over the cylinders when he turned them on, and from this position failed to observe the distinguishing mark. The autopsy was performed by Sir Bernard Spilsbury, who said that the cause of death was asphyxia from carbon dioxide gas. All efforts to restore animation failed, including heart massage and artificial respiration. The verdict recorded was death from misadventure.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Mr. J. Swift Joly will give a special clinical demonstration at St. Peter's Hospital on Wednesday, May 25th, at 2 P.M. On the same day, at 1 P.M., Mr. H. Neame will demonstrate at the Royal London Ophthalmic Hospital. On Thursday, May 26th, at 2.15 P.M., Dr. E. G. B. Calvert will give a clinical demonstration at the Royal Northern Hospital. All these demonstrations are open to medical practitioners without fee. From June 8th to 21st the Chelsea Hospital for Women will hold a special course in gynæcology (fee £5 5s.). A four weeks' afternoon course will be held at the Central London Ophthalmic Hospital from June 8th to July 2nd. Instruction will be given in the out-patient department, and there will be lectures on the more important diseases of the eye. An operative course will be arranged if desired. (Fee, £3 3s. for the clinical course and £5 5s. for the operative class.) From June 13th to 25th a course in diseases of children will be given at the Children's Clinic. Sessions will also be held at the Hospital for Diseases of the Heart, Bethlem Royal Hospital, Royal National Orthopædic Hospital, the Royal Waterloo Hospital, and elsewhere. (Fee £2 2s.) An afternoon course has been arranged at the Hospital for Diseases of the Skin, Blackfriars, from June 20th to July 1st. On each Tuesday cases of special interest will be shown. (Fee £1 1s.) From June 27th to July 9th the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E., will provide a special course. The entire practice of the hospital will be open to those enrolling. The Fellowship can arrange for practical courses in anæsthetics and obstetrics, and can also make arrangements for clinical assistantships in gynæcology. A general course of instruction is also provided at the associated hospitals, for which a separate programme is published. Copies of all syllabuses and of the *Post-Graduate Medical Journal* may be obtained from the Secretary of the Fellowship at 1, Wimpole Street, W.1.

Obituary.

NEVILLE THOROLD WOOD, M.D. DURH., M.R.C.P. LOND.

Dr. Neville Wood, who died on May 14th at the age of 69, was well known in London for his exceptional knowledge of British and foreign spas and of the conditions to which their methods of treatment are suited. He was educated at Eastbourne College and St. George's Hospital, and after qualifying as M.R.C.S. Eng. in 1883 continued his medical study at Paris and perfected a knowledge of French which afterwards served him well. He became a Member of the Royal College of Physicians of London in 1892 and graduated M.D. Durh. in 1899. The intervening years were occupied in private practice, but he continued to enlarge his hospital experience by a number of appointments which included clinical assistantships at the Chelsea Hospital for Women, the Victoria Hospital for Children, and the London Throat Hospital. Later he held a similar appointment at the Royal Westminster Ophthalmic Hospital, and at the time of his death he was consulting physician to the Kensington Children's Hospital and Dispensary. His special interests, however, were in medical hydrology, and his writing contributed a good deal towards the more intelligent use of climatic and other natural resources. He was one of the early members of the British Balneological and Climatological Society, founded in 1895, which was the first attempt to organise the medical profession at the health resorts and to stimulate the development of the science of waters and climates in this country. He subsequently held the office of President when this Society became a section of the Royal Society of Medicine, and on behalf of a committee of that section edited a volume entitled "Health Resorts of the British Islands" (1912) which was well received and was translated into French. Like the "Climates and Baths" of the Royal Medical and Chirurgical Society (1895), it contains articles of permanent value, especially those in which competent authorities have described the climates that distinguish the different sections of the British coasts, and undoubtedly it contributed to the new and comprehensive view of these localities as a medical and national asset.

"Neville Wood," writes a colleague, "was a strenuous worker. Like his own handwriting he was forcible, a little angular, and at times hard to comprehend, but he had generous impulses and a kind heart. When I saw him last after long illness and many operations he was still occupied with objects of interest and expatiating with pleasure upon the beauties of colour."

A man of varied talents, Dr. Wood enjoyed a good general practice in Kensington. He was at one time President of the West London Medico-Chirurgical Society and was a corresponding member of the American Clinical Climatological Society.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 7TH, 1927.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 337 (last week 277); scarlet fever, 1375; diphtheria, 793; enteric fever, 34; pneumonia, 884; puerperal fever, 35; puerperal pyrexia, 101; cerebro-spinal fever, 14; acute poliomyelitis, 6; encephalitis lethargica, 43; typhus fever, 1; dysentery, 5; ophthalmia neonatorum, 124. No case of cholera or plague was notified during the week. The single case of typhus fever was notified in Sunderland Port Sanitary District.

Cases of small-pox were notified from the counties of Derby 16, Durham 164, Middlesex 1 (Hendon), Northumberland 29, Nottingham 3, Stafford 1, Yorks East Riding 1

(Hull), North Riding 3 (Middlesbrough), West Riding 51, Brecknock 2 (Brynmawr), Monmouth 66.

Deaths.—In the aggregate of great towns including London there were 4(0)deaths from small-pox, 3 (0) from enteric fever, 57 (1) from measles, 4 (1) from scarlet fever, 34 (13) from whooping-cough, 25 (5) from diphtheria, 50 (11) from diarrhœa and enteritis under 2 years, and 57 (7) from influenza. The figures in parentheses are those for London itself.

SMALL-POX IN LONDON.—Six out of 11 cases of small-pox reported in the London area have now proved fatal, and the chairman of the Public Health Committee remarked in the London County Council on Tuesday that the disease in London was more severe than that prevalent in the Midlands and Northern area. There could be little doubt, he added, that the outbreak was attributable to some undisclosed cause or causes imported from abroad. All except two of these cases were notified to the Hendon Urban District Council, although two of them were discovered in a nursing home in Hampstead under treatment for supposed chicken-pox. A single case had been reported in each of the metropolitan boroughs of Hampstead and Poplar. The London County Council has agreed to distribute precautionary circulars where this seems advisable through its school organisation.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.
THURSDAY, May 26th—4.30 P.M. *The following papers will be read:* Helga Pearson: On the Skulls of Early Teritiary Suidæ, together with an Account of the Otic Region in some other Primitive Artiodactyla. (Communicated by Prof. D. M. S. Watson.) A. W. Greenwood and F. A. E. Crew: Studies on the Relation of Gonadic Structure to Plumage Characterisation in the Domestic Fowl. II. The Developmental Capon and Poularde. (Communicated by Prof. R. C. Punnett.) F. A. E. Crew: The Laying Hen with Cock's Plumage. Part III. (Communicated by Prof. R. C. Punnett.) E. J. Salisbury: On the Causes and Ecological Significance of Stomatal Frequency, with special reference to the Woodland Flora. (Communicated by Prof. F. W. Oliver.) J. W. Trevan: The Error of Determination of Toxicity. (Communicated by Dr. H. H. Dale.) C. K. Drinker and E. D. Churchill: A Graphite Suspension for Intravital Injection of Capillaries. (Communicated by Dr. H. H. Dale.) F. W. R. Brambell: The Development and Morphology of the Gonads of the Mouse. Part I. The Morphogenesis of the Indifferent Gonad and of the Ovary. (Communicated by Prof. J. P. Hill.) A. S. Parkes: On the Occurrence of the Œstrous Cycle after X Ray Sterilisation. III. The Periodicity of Œstrus after Sterilisation of the Adult. (Communicated by Prof. J. M. Hill.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, May 23rd.—5.30 P.M., ODONTOLOGY. Annual General Meeting at the Royal College of Surgeons, Lincoln's Inn Fields, W.C. 2. The reconstructed Odontological Museum will be opened by the President of the College, Sir Berkeley Moynihan. Election of Officers and Council for 1927–1928.
TUESDAY.—5 P.M., MEDICINE. Annual General Meeting. Election of Officers and Council.
WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Annual General Meeting; Election of Officers and Council. *Paper:* Dr. M. J. Rowlands: Rheumatoid Arthritis—is it a deficiency disease? The discussion on the paper will be opened by Prof. R. H. Plimmer, followed by Prof. J. C. Drummond.
THURSDAY.—8.30 P.M., UROLOGY. Annual General Meeting; Election of Officers and Council. *Paper:* Prof. Hans Wildbolz (Berne): The Indication and Execution of Prostatectomy.
FRIDAY.—5 P.M. (Cases at 4.30 P.M.). DISEASE IN CHILDREN. Annual General Meeting: Election of Officers and Council. *Presidential Address.* Dr. J. D. Rolleston: The Section and its Work, 1908-1926. 8 P.M., EPIDEMIOLOGY AND STATE MEDICINE. Annual General Meeting: Election of Officers and Council. *Paper:* Dr. W. S. C. Copeman: The Prophylaxis of Measles, with a Suggested Scheme for Dealing with Epidemics.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY (Incorporating the LONDON DERMATOLOGICAL SOCIETY), 49, Leicester-square, W.C.
WEDNESDAY, May 25th.—4.15 P.M., Clinical Cases.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.
FRIDAY, May 27th.—8.30 P.M., Dr. G. Riddoch: The Prognosis and Treatment of Neurosyphilis. A discussion will follow.

MEDICO-LEGAL SOCIETY.
THURSDAY, May 26th.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.) Sir G. Lenthal Cheatle: Some Medico-Legal Aspects in the Fracture of Bone. A discussion will follow.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.
SATURDAY, May 21st.—2.30 P.M. (at St. Thomas's Hospital). Dr. G. T. Hebert: Interpretation of Negatives in Chest Radiology.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
MONDAY, May 23rd, to SATURDAY, May 28th.—FELLOWSHIP OF MEDICINE. Wed., 2 P.M., Mr. Swift Joly, St. Peter's Hospital, demonstration. Wed., 1 P.M., Mr. H. Neame, Royal London Ophthalmic Hospital, demonstration. Thur., 2.15 P.M., Dr. E. G. B. Calvert, Royal Northern Hospital, demonstration. These demonstrations are free to members of the medical profession.—ALL SAINTS' HOSPITAL, Vauxhall Bridge-road, S.W. Afternoons and evenings, demonstrations including cystoscopies. Wed., special lecture.—LONDON SCHOOL OF TROPICAL MEDICINE, Endsleigh-gardens, N.W. Tues., Dr. Manson-Bahr. Thurs., Dr. Low: lecture-demonstrations at 2 P.M.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Wed., 5 P.M., demonstration by Prof. McIlroy.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C. Intensive Course.—LONDON LOCK HOSPITAL, Dean-street, W. Clinical Course.—MAUDSLEY HOSPITAL, Denmark Hill, S.E. Special course in Psychological Medicine.—INFANTS HOSPITAL, Vincent-square, S.W. Afternoon course, special lectures and demonstrations.—HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W. Special Course for General Practitioners, 4.30 to 6 P.M. Medicine, Surgery and the Specialties.
Further information from the Secretary.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, May 23rd.—10 A.M., Mr. MacDonald: Genito-Urinary Operations. 2 P.M., Dr. Ironside: Medical Out-patients. 5 P.M., Mr. Addison: Inflammatory Conditions of Breast.
TUESDAY.—10 A.M., Medical Registrar: Ward Demonstration. 2 P.M., Mr. Addison: Operations. 2 P.M., Mr. Sinclair: Surgical Out-patients.
WEDNESDAY.—10 A.M., Dr. Owen: Medical Diseases of Children. 12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 5 P.M., Mr. Donald Armour: Head Injuries.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Donald Armour: Operations. 2 P.M., Mr. Bishop Harman: Eye Department.
FRIDAY.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Dr. Pritchard: Modern Methods in Medicine. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy and Ward Visit. 10 A.M., Dr. Owen: Medical Diseases of Children.
Operations, Medical, Surgical and Special Out-patients daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M.

NORTH-EAST LONDON POST-GRADUATE COLLEGE Prince of Wales's General Hospital, Tottenham, N.
MONDAY, May 23rd.—2 P.M., Medical Cases in the Wards. 2.30 P.M. to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 P.M. to 5 P.M., Medical, Surgical, Throat, Nose, and Ear Clinics. Operations.
WEDNESDAY.—2.30 P.M. to 5 P.M., Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinic. 2.30 P.M. to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 P.M. to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations. 4.30 P.M., Special Demonstration on Selected Cases of Nerve Diseases by Dr. L. R. Yealland.

KING'S COLLEGE, Strand, W.C.
TUESDAY, May 24th.—5 P.M., Prof. R. J. S. McDowall: Autonomic Nervous System. (Last of four free lectures.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN, Hunter-street, W.C.
MONDAY, May 23rd.—5.30 P.M., Prof. H. Beckwith Whitehouse: The Menstrual Function. (Second lecture.)

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, W.
THURSDAY, May 26th.—5 P.M., Prof. Hugh MacLean: Insulin in the Treatment of Diabetes and Some Other Nutritional Disturbances.

GUY'S HOSPITAL MEDICAL SCHOOL, London Bridge, S.E.
FRIDAY, May 27th.—5.30 P.M., Prof. E. H. Kettle: Inflammation and Infection. (Second of four free lectures.)

UNIVERSITY COLLEGE, Gower-street, W.C.
TUESDAY, May 24th.—5.30 P.M., Mr. W. H. McLean (late Sudan Government Services): National, Regional and Town Development Planning. (Third lecture.)

ROYAL NORTHERN HOSPITAL, Holloway-road, N. (Intensive Course.)
MONDAY, May 23rd.—2.15 P.M., Dr. A. Lisle Punch: Some Points in the Diagnosis of Pulmonary Disease. 3.15 P.M., Mr. W. B. Gabriel: Notes on Diseases of the Rectum.
TUESDAY.—2.15 P.M., Dr. R. Wade: Anæsthesia. 3.15 P.M., Mr. L. E. Barrington-Ward: Demonstration of Surgical Cases.
WEDNESDAY.—2.15 P.M., Dr. H. C. Semon: Common Skin Ailments, with Clinical Examples. 3.15 P.M., Dr. Malcolm Donaldson: The Uses of Radium in Gynæcology.
THURSDAY.—2.15 P.M., Dr. E. G. B. Calvert: Modern Methods in Disorders of Digestion. 3.15 P.M., Mr. F. D. Saner: Some Aspects of Visceroptosis.
FRIDAY.—2.15 P.M. (at Royal Chest Hospital), Dr. A. W. Scott: Some Points in the Diagnosis of Heart Disease. 3.15 P.M. (at Royal Chest Hospital), Dr. D. Barty King: Some Practical Points in the Diagnosis of Diseases of the Chest.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, May 24th.—5 P.M., Dr. H. MacCormac: Treatment of Syphilis (2).
THURSDAY.—5 P.M., Dr. K. Sibley: Electrotherapeutics.

MANCHESTER ROYAL INFIRMARY, POST-GRADUATE COURSE.
TUESDAY, May 24th.—4.15 P.M., Dr. R. S. Paterson: Interpretation of X Ray Findings in Gastro-Intestinal Work.
FRIDAY.—4.15 P.M., Dr. T. Coogan: Anæsthetics.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, May 27th.—3.30 P.M. (at the Royal Infirmary), Mr. Kerr: Cancer of the Larynx.

Appointments.

DAVIS, J. H. E., L.R.C.P. & S. Irel., has been appointed a Medical Referee under the Workmen's Compensation Act, 1925, for the districts of the Bangor, Conway, Llandudno and Colwyn Bay, and Llanrwst County Courts (Circuit No. 29).

WALKER, G. B. WOOD, M.B., B.Chir. Camb., Resident Medical Officer to the Freemasons Hospital and Nursing Home, Chelsea.

Certifying Surgeons under the Factory and Workshop Acts: FERGUSON, D., M.B., Ch.B. Glasg. (Buckhaven, Fife); ROTHWELL, T. W., M.B., Ch.B. Manch. (Sedbergh, York).

Vacancies.

For further information refer to the advertisement columns.

Birmingham, General Hospital.—Asst. Res. Surg. O. £100.
Birmingham, St. Chads Hospital.—Res. M.O. £100.
Bolingbroke Hospital, Wandsworth Common, S.W.—Hon. P. Dermatologist. Hon. Asst. P. Neurology, Hon. Ophth. S. Also H.P. At rate of £120.
Bolton Infirmary and Dispensary.—Two H.S.'s. £150. Also Asst. H.S. £100.
Bolton Union, Townleys Hospital, Farnworth.—Second Asst. M.O. £225.
Bradford, City of.—Asst. School M.O. £600.
Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.
Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.
Cyprus.—Specialist in Venereal Diseases. £700.
Evelina Hospital for Children, Southwark, S.E.—H.P. At rate of £120.
Federated Malay States.—Radiologist. $500–25–800 a month.
General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. At rate of £100.
Hastings Union, &c.—Res. M.O., &c. £450.
Hong-Kong.—M.O.H. £750.
Hospital for Sick Children, Great Ormond-street, W.C.— R.M.O. for Branch Hospital, Tadworth Court, Walton Heath, Surrey. At rate of £250. Also H.P. and H.S. Each £50.
Huddersfield, Storthes Hall Mental Hospital, Kirkburton.—Sen. Asst. M.O. £500.
Keighley and District, Victoria Hospital.—Res. M.O. At rate of £180.
Leeds, Jewish Herzl-Moser Hospital.—Res. M.O. £50.
London Hospital, E.—Gynæcological and Obstetric Dept.—Res. First Asst. £300.
Manchester, Ancoats Hospital.—H.S. At rate of £100.
Manchester, Northern Hospital for Women and Children, Cheetham Hill-road.—Sen. and Jun. H.S.'s. £130 and £100 respectively.
Manchester Royal Infirmary.—Dickinson Surgery Scholarship. £75.
Manchester, Royal Manchester Children's Hospital.—Sen. M.O. £300.
Middlesex Hospital, Ferens Institute of Otolaryngology.—Bernhard Baron Research Studentship. £300.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Anæsthetist. 52 guineas.
Newark Hospital.—Res. H.S. £200.
Oxford, Radcliffe Infirmary and County Hospital.—H.S. and Obstet. H.P. At rate of £120.
Queen Mary's Hospital for the East End, Stratford, E.—Hon. Asst. Phys. Also H.P., H.S.'s. Obstet. H.S. Also H.P. and Cas. O.
Rochester, St. Bartholomew's Hospital.—Res. Surg. O. At rate of £225.
Royal Free Hospital, Gray's Inn-road, W.C.—H. Surgs., H.P.'s., Cas. O., &c. Each £100. Also Asst. Surg. to Ear, Nose and Throat Dept.
Royal Northern Hospital, Holloway, N.—Asst. Surg. O. £75.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Asst. Ophth. Surg.
Royal Westminster Ophthalmic Hospital, King William-street, Strand, W.C.—Asst. Surg.
St. John's Hospital for Diseases of Skin, Leicester-square, W.C.—Clin. Assts.
Salisbury General Infirmary.—Pathologist and Bacteriologist. £500. Hon. Asst. Surg. Also H.S. £150.
Smethwick County Borough.—Asst. M.O.H. £550.
Stoke-on-Trent, City of.—Deputy M.O.H., &c. £750.
Truro, Royal Cornwall Infirmary.—H.S. £170.
University College Hospital, Gower-street, W.C.—Surg. for Genito-Urinary Dis.
Ware Park Sanatorium, near Ware, Herts.—Asst. M.O. £350.
West End Hospital for Nervous Diseases, Gloucester Gate, Regent's Park, N.W.—Sen. H.P. and Jun. H.P. At rate of £150 and £100 respectively.
West Ham County Borough, Plaistow Fever Hospital.—Second Asst. M.O. £300.
Wigan Infirmary.—Third H.S. At rate of £150.
Wolverhampton and Staffordshire Hospital.—H.S. At rate of £150.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Dursley, Glos.

Births, Marriages, and Deaths.

BIRTHS.

DAVIDSON.—On May 11th, at Beverley, Camberley, the wife of Dr. F. Churchill Davidson, *M.C.*, of a son.

LIVINGSTON.—On May 10th, at Osborne House, Champion Hill, S.E., the wife of Alexander Livingston, M.B., M.D.S., of a daughter.

MARRIAGES.

JONES—BLAIR.—On May 12th, at All Saints' Church, Rudby, Maurice Howard Jones, M.D., to Marian Elspeth Sadler, youngest daughter of Mrs. Blair and the late Mr. P. A. F. Blair, Hutton Rudby, Yorkshire.

NICHOLSON—MARRIOTT-DODINGTON.—On May 10th, in London, George Nicholson, M.D., F.R.C.S., to Helen, daughter of Brig.-General and Mrs. Marriot-Dodington, of Bolham House, Tiverton.

SAWYER—WINGFIELD.—On April 20th, at Uxbridge, John Edmund Sawyer, of Kidlington, Oxf., to Lina Wingfield, M.R.C.S., L.R.C.P., of Brooklyn, West Drayton.

DEATHS.

ANDERSON.—On May 12th, at Castletown-road, West Kensington, Joseph William Townsend Anderson, retired Lieut.-Colonel I.M.S., F.R.C.S., L.R.C.P., L.S.A.

CRAWLEY.—On April 25th, at New-road, Portsmouth, Herbert Edward Crawley, M.R.C.S. Eng., L.R.C.P. Lond., aged 51 years.

MACLAREN.—On May 10th, at Dunreggan, Elie, James Duncan MacLaren, M.D., in his 95th year.

STEPHENS.—On May 17th, at the White House, Emsworth, Hants, Edith, the beloved wife of Lockhart Stephens.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

HOSPITALS CONGRESS AND EXHIBITION.—The fourth annual congress of the Incorporated Association of Hospital Officers will be held at the Royal Horticultural Hall, Westminster, on Friday and Saturday, May 27th and 28th, under the presidency of Sir Arthur Stanley, when the subjects for discussion will be hospital policy, with particular reference to the raising of funds, and hospital planning and construction. During the congress there will be an exhibition to illustrate up-to-date hospital construction equipment, and domestic management. This exhibition, the first of its kind in this country, will be opened by H.R.H. Princess Arthur of Connaught at noon on Thursday, May 26th.

Notes, Comments, and Abstracts.

FOREIGN HOSPITALS.

ON May 16th Mr. Lionel Pearson read a paper before the Royal Institute of British Architects on Recent Developments in Hospital Planning Abroad.

His paper was based on visits paid to hospitals in Holland, Denmark, and Sweden and in the Eastern States of America. In these countries, he pointed out, the economic effect of the war was not so severe as in England, so that their hospital development has been more continuous. He found that European hospitals are rather on the lines adopted in this country—that is to say, the horizontal type of planning is the favourite, and a modified type of the pavilion system still holds its own; but in the United States there is a strong tendency to adopt the vertical type of planning, and the pavilion system is coming to be regarded as old-fashioned. Some critics would say that in Europe the comfort of the patient is the first consideration, while in America the efficiency of the staff is put before everything else, but the two points of view seem to be of almost equal importance in hospital planning. In all the countries there is a friendly rivalry to produce buildings which are up-to-date from the point of view of medical science and at the same time attractive to the patient. And in his journeys he was cheered to find that some of the difficulties that beset hospital architects in this country are apparently universal; for instance, he never met a sister who was really satisfied with the accommodation provided for linen, or found a type of window which admitted fresh air without causing a complaint from some patient in the ward.

European Hospitals.

Mr. Pearson then described a series of hospitals which he had seen abroad. The characteristics which may be said to be typically Dutch are cheerfulness, cleanliness, and common-sense, with solidity of construction and fresh air and light everywhere. The colour schemes are usually very cheerful, and Holland may be said to have very much our ideals in hospital design. The tendency in Denmark is to prefer large hospitals built in the pavilion system, the buildings generally being of ample dimensions, well built and well fitted internally. The objection to this system is undoubtedly the length of the corridors and the amount of energy expended by the staff in conveying themselves and the food and stores over these considerable distances. In addition to this the monotonous repetition of blocks is very depressing architecturally, and the size of the institution must rather eliminate the human element. However, there are no doubt very great advantages to be gained in other ways, as the Danes are an extremely practical people and their hospitals have a very high reputation.

In Sweden a distinct attempt has been made in hospitals recently built to make the buildings architecturally attractive, as is to be expected in a nation which is so artistically alive. The small wards, and to some extent individual sanitation, are approaching the up-to-date American model, but there is a lack of finish in the detail and the constructional methods which falls much behind the best American work. Perhaps in the cold northern climate there is not the same necessity for precautions as to ventilation, rounded angles and all the detail considered of such importance in England.

American Methods.

The industrial expansion in the United States of recent years has led to a great building activity, especially in the big cities, said Mr. Pearson, and the number of hospitals which have been built during the last ten years is amazing. Fortunately the leading architects are mostly located in New York and Chicago, and as they are most generous in imparting information the task of examining their design is much simplified. Whilst in New York he was introduced to Dr. Goldwater, the Director of Mount Sinai Hospital, and one of the leading hospital consultants in America, and he came to realise what an important part these consultants play in the hospital business in the States, acting as they do as liaison between the architectural and medical professions. The coördination of specialists is one of the successful features of American practice, and the result is that before the building is begun the plans are settled in great detail, and the result is speed and efficiency in the erection.

As the great majority of the people of the Eastern States live in cities, the city hospital is the most usual type, and the multi-storeyed hospital is the most popular just now, following the line of the office building, hotel, or apartment house. This has led to the vertical type of planning, with the elevator, the laundry chute, and various other labour-saving devices playing a leading part in the construction. The long corridors of the European hospital are considered quite out of date, and one American visitor remarked after seeing one of our hospitals that he hoped the staff were fitted with roller skates. The concentration which results from the vertical plan certainly simplifies the problem of the heating, lighting, plumbing, and other services. There is also the element of what must be called advertisement (for want of a better word), as the high building is never out of sight and out of mind.

The Typical American Hospital.

Noticeable features of the typical American hospital, said Mr. Pearson, are that the entrance is made as attractive as possible, and the waiting-room is furnished like a hotel lounge, and frequently repeated on a smaller scale on the ward floors. The inquiry office is usually facing the entrance, and is sometimes in the hall itself, as central heating allows halls and corridors to be used in this way. The record room is also near at hand, and the methods of filing and keeping records are justifiably a source of great pride to the superintendents and stenographers. The staircase is not a very important feature as a rule, but the elevator-lobby makes up for this. The kitchen, most frequently placed in the basement and mechanically ventilated, is equipped with every sort of device—electrically heated food conveyors, electric dish-washing machines, mixing machines, orange-squeezers, and the like. A cafeteria for the staff is now quite usual, and even the nursing staff are treated to this form of self-service.

The wards are now in much smaller units than formerly—16 beds being the maximum, and these are frequently divided by glazed screens into bays of four beds. The single-bed ward is becoming increasingly the fashion, though an expert has calculated that only 30 per cent. of the patients in an ordinary hospital really require them. The nurses' station is either in a glazed enclosure overlooking the ward, or else open to the corridor commanding the approach to the ward. The diet kitchen is centrally placed, and it may be noted that the use of refrigerators is general, and "the larder facing north" is not required. Opening off the corridor are linen stores, pails and brooms, &c., and all the usual accessories, including the very important flower-room, with a sink and shelves. The solarium is either at the end of the ward or a loggia provided on each floor for the use of patients, leaving the ward clear of balconies, and at the top of the building a comfortably furnished sun room is provided with French windows opening on to the "deck" over wards below.

The operating block has an operating theatre with floor and walls of pale grey or pale green tiles, or similar material (I saw only one instance of rubber), and the top-light is decidedly out of fashion. The reason for this is that the present-day surgeon prefers artificial light, and in one instance 100 cases between 7 A.M. and 7 P.M., in the month of October, showed 69 artificial and 31 natural. The anæsthetic room usually opens off the corridor, and is frequently furnished like an ordinary room to avoid the "operation atmosphere."

The plumbing of American hospitals is on rather different lines from what is considered correct in this country. The sink room (known as the "utility room") opens off the corridor without a cross-ventilated lobby, while baths and w.c.'s (known as "toilet") often open out of the patients' rooms, and are frequently without windows, depending on mechanical ventilation. The pipes are almost always buried in the wall or ceiling, which adds greatly to the smartness and cleanliness of the sanitary rooms. All this shows great confidence in modern methods of plumbing, though Mr. Pearson suspected that some time there may be trouble ahead.

Some Conclusions.

After describing nine large hospitals in the United States Mr. Pearson reviewed his impressions. It is difficult, he said, to arrive at any very definite conclusions from a survey which includes countries of greatly different climate and conditions, but there are some tendencies which are marked everywhere. The large ward of 25 or 30 beds seems to be a thing of the past, and smaller units are the rule—16 beds fairly frequent, but 12 beds usually preferred. The number of rooms allocated to private and semi-private use is the most marked feature of the present-day planning, though naturally less marked in Europe than in America. The individual sanitation which accompanies it in the latter country is perhaps rather overdone; it must mean great expense in the cost of plumbing and fixtures and entail a considerable amount of labour in the running of the hospital, but the provision of hot and cold water in private rooms, and rooms for nurses and staff is of great advantage, as the hotels are finding in all countries.

The cross-ventilated lobby is no longer insisted on to the same extent, partly owing to the confidence felt in modern plumbing and partly on the ground of cost. The central

corridor, on the other hand, found in so many American hospitals, is not a feature of the plan which he would like to see followed, and in this respect the European hospitals appear to have the advantage in point of cheerfulness and health. In comparing the vertical and horizontal systems of planning, there are points in favour of each, but on the question of extension (which is of primary importance to hospitals), there is little doubt the horizontal system is easier to handle. Mechanical efficiency is found most highly developed in America, but reliance in mechanical means has certain drawbacks, and the case of mechanical ventilation may be given as an instance. The saving of labour, however, is so important that attempts in that direction ought to be welcomed.

Oil-fuel installations are being adopted increasingly, as they result in the saving of labour caused by the handling of coke and ashes, and they also have the advantage of greater cleanliness. Finally, the question of architectural interest and beauty is now recognised to be just as important for hospitals as it is for banks, churches, and private residences. The general level of hospital design is now very high, and the fact that funds are invariably limited has not been altogether a disadvantage, for it has often resulted in a dignified simplicity which expresses the character and purpose for which the building has been erected.

COLONIAL HEALTH REPORTS.

BRITISH GUIANA.

A REPORT prepared by Mr. B. H. Bayley, acting Assistant Colonial Secretary, on the affairs of this colony for the year 1925 has been issued. The estimated population on Dec. 31st was 304,412 (154,543 males and 149,869 females). 10,197 births (5276 boys and 4921 girls) were registered during the year. The birth-rate was 33·5 per 1000 of the population. The deaths were 7352—24·2 per 1000. The birth- and death-rates per 1000 of the estimated population of each of the several races representing the community were as follows :—

Races.	Birth-rate per 1000.	Death-rate per 1000.
Europeans (other than Portuguese)	10·7	8·6
Europeans (Portuguese)	24·1	21·1
East Indians	37·3	27·7
Chinese	30·9	16·7
Aborigines	34·8	20·8
Blacks	29·7	23·1
Mixed races	37·7	18·2

The number of children who died under 1 year of age was 1582, or 155 per 1000 births, for 1925, as compared with 1606, or 165 per 1000 births in 1924. A new hospital built by the Demerara Bausite Company on the Demerara River, where the company's plant is situated, was formally opened in May. It serves a large number of people, not only at Mackenzie, but also over a wide area of country, and can accommodate 80 patients. The Bausite Company carries on a continuous campaign against malaria with satisfactory results, and ankylostomiasis has already been eradicated from the company's labouring force.

The climate, although warm, is distinctly cooler than that of other British colonies in tropical latitudes, and Europeans and other Northern races enjoy consistently good health. The mean temperature throughout the year was 80·3° F., the mean maximum being 90° and the mean minimum 69°. The heat, which is greatly tempered by cooling breezes from the sea, is felt most from July to October, owing to decreased force of these breezes. There are annually two wet seasons, from April to the middle of August and during December and January. The annual rainfall for the past 45 years averaged 91·65 inches in Georgetown. The rainfall in 1925 was 63·25 inches, as compared with 83·54 in 1924. Sir Cecil Rodwell, K.C.M.G., who succeeded Sir Graeme Thomson, K.C.B., as Governor, arrived in British Guiana and assumed the government of the colony on Nov. 20th.

FIJI.

Mr. D. R. Stewart, the acting Colonial Secretary, has furnished a report for the year 1925, in which he states that the general health was satisfactory, apart from an epidemic of typhoid fever in Suva, in which there were 350 cases and 28 deaths. Whooping-cough and influenza were prevalent throughout the colony, but there was very little dysentery and no other serious infectious disease. Continued progress was made in the campaign against ankylostomiasis. This disease is no longer a prevalent cause of debility of the Indian population. Practically the whole population has received one treatment, and those living in the wet districts, where it was formerly most prevalent, a second treatment. The Makogai Leper Asylum received during the year patients from Samoa, New Zealand, and Niue, and arrangements are complete to receive those from Tonga and the Cook Islands. Over 5000 injections of salvarsan were given during the year, and secondary and tertiary yaws are steadily decreasing. The Lautoka hospital with 46 beds for East Indians and nine for Europeans was opened towards the end of the year. The vital statistics remain satisfactory, except in so far as the death-rate of the Fijian population is concerned. The deaths during the year and the percentages of the respective classes of population were as follows : Europeans 37, being 0·90 per cent. ; Fijians 2012, being 2·2 per cent. ; Indians 494, being 0·72 per cent. ; others (excluding Rotumans) 61, being 0·86 per cent. The births were as follows : Europeans 68, being 1·66 per cent. ; Fijians 2856, being 3·22 per cent. ; Indians 2258, being 3·31 per cent. ; others (excluding Rotumans) 169, being 2·46 per cent. 1121 marriages were registered, being at the rate of 0·066 of the population. During the year 2437 persons arrived in the colony and 2457 departed. Arrivals and departures were almost all residents in the colony. There was no repatriation steamer for Indians during the year, as it was not found possible to arrange a charter. The mean maximum temperature for the year was 82·7, and the mean minimum 70·6. The highest recorded was 91 on Feb. 6th, and the lowest 59·8 on July 3rd. Rain fell on 217 days during the year, with a total fall of 106·66 inches. The greatest fall in 24 hours was 5·84 inches on Sept. 11th. The trade winds were exceptionally light and unreliable during the season. There were 21 thunder-storms.

The islands of Fiji owe their origin in part to volcanic upheaval. There are, however, now no active volcanoes, but several of the high mountains were formidable craters in past times. In several places hot springs are met with, those best known being situated at Savusavu, on the island of Vanualevu, on the Wadina River, north of Suva, and on several of the islands of the Lomaiviti group. The highest altitude reached is Mount Victoria (4550 feet). Most of the islands are practically surrounded by coral reefs, between which and the shore there is provided a well-protected waterway.

BARBADOS.

Mr. J. B. Howell, acting Colonial Secretary, is responsible for the report for 1925–26 just issued. It states that the population on Dec. 31st, 1925, was estimated to be 162,211, but as this estimate depends on emigration and immigration figures, which experience has often shown to be seriously inaccurate, not much reliance can be placed upon it. The change in the immigration laws of the United States has put a stop to the rush of emigration to America, as the annual quota now allowed is about 60, whereas in 1923 over 1700 persons emigrated to the States, and the number was tending to increase, as those who had settled there sent money to their relations and friends to enable them to join them. The birth-rate during the year was 34·85 per 1000, and the death-rate 29·46. The percentage of illegitimate births was 70·92. In January, 1925, a Registration of Deaths Act came into force ; there was no registration prior to that date. The following is a table of the principal causes of death in 1925 : enteric fever, 84 ; bowel complaints, including dysentery, diarrhœa, and enteritis, 1123 (of whom 82 per cent. were children under three years old) ; pneumonia and bronchitis, 244 (84 per cent. being of children under three) ; kidney diseases, 197 ; phthisis and other forms of tuberculosis, 208 ; diseases peculiar to infancy, 520 ; old age, 153 ; diseases of the heart, 380 ; syphilis 473 (62 per cent. being children under three) ; and diseases of the nervous system, 335.

Barbados enjoys natural and climatic advantages from a health standpoint, such as can scarcely be found in any other tropical place. Malaria is unknown, there are no extremes of heat or cold, the soil is well drained, and the water-supply very good ; it is, moreover, constantly swept by the trade winds. In these circumstances it is an unusually healthy place of residence for all who are able to secure for themselves freedom from insanitary surroundings. Enteric fever and dysentery are, however, unfortunately common. The number of cases of enteric notified during the last five years has been : 1921, 3070 ; 1922, 1084 ; 1923, 735 ; 1924, 762 ; 1925, 432. The ordinary type of enteric fever cases is of a mild character. A Venereal Disease Clinic was established in 1922 at the General Hospital, and it has been attended by steadily increasing numbers. The cases treated in 1925 numbered 4317, as against 3085 in 1924. Clinics in other parts of the island are much needed. The treatment of lepers at the asylum by the injection of moogrol, &c., which was commenced in 1921, was continued during the year, and 15 inmates who had been medically boarded and declared to be cured were discharged from the asylum. In view of the recommendations of the British Empire Leprosy Relief Association for dealing with cases of leprosy, and as a result of a recent visit to the colony of Mr. Frank Oldriene (secretary of the Association) a complete change in the outlook with regard to this problem and its treatment has taken place ; and it is hoped that sufferers will be induced to come forward for treatment in their earlier stages, when they are more amenable.

NEW PREPARATIONS.

"HYPOLOID" EPHEDRINE HYDROCHLORIDE.—In addition to "Tabloid" Ephedrine Hydrochloride, gr. ½, which has been available for some months, Messrs. Burroughs Wellcome and Co. are supplying "Hypoloid" Ephedrine Hydrochloride, 0·03 g. (gr. ½ approx.), for hypodermic injection. The "Tabloid" and "Hypoloid" products are of uniform composition and therapeutic activity, and they present the true alkaloid, particular care being taken to exclude pseudo-ephedrine. "Hypoloid" Ephedrine Hydrochloride, 0·03 g., is issued in boxes of ten 1 c.cm. phials.

EATAN.—This preparation, which is to be obtained direct from the distributing agent, Mr. Alfred Dehez, Monument Buildings, London, E.C. 3, has been brought to our attention from the University Hospital in Zurich, where satisfactory results have been obtained from its use. Also, under the description of "Hydrolized Albumen," one of the medical officers of the Charité Hospital, Berlin, has given a favourable account of the use of Eatan and similar evidence has been published in the *Deutsche Medizinische Wochenschrift*. The preparation is described as being the result of "total reduction of animal albumin, blood, connective tissues, bones, joints, blood-forming, internal, secretory and other organs," but the method of preparation is not explained nor is the sort of concrete information given which can be checked by analysis. Granted that the preparation is nutritive and restorative, because this view is supported by a good deal of medical testimony, the demands of scientific therapeutics are not met in the literature which is circulated with the preparation. It is supplied in small bottles at the price of 4*s.* net, and on medical advocacy seems worth trial in cases of debility of varied origin.

IODINE.

A RECENT publication by Dr. Kenneth Fraser [1] upholds the importance of a sufficiently iodised diet in preventing a number of conditions besides goitre. His interest in the subject was first aroused by the success of iodine in an apparently hopeless case of rheumatism. He then studied the school-children under his care from the point of view of iodine deficiency, and came to the conclusion that lack of this substance played a part in causing such conditions as boils, chronic septic spots, chronic bronchitis, and debility. He and his colleague Dr. A. H. Towers accordingly administered iodine to children who had failed to respond to the usual lines of tonic treatment, and their results impressed them very much. Dr. Fraser states that in practically every case parents and head teachers reported a marked improvement in health and physique, and a gain in weight, energy, and working capacity. Septic spots and boils vanished, chronic rhinitis cleared up, colds and coughs disappeared and did not recur. In several cases persistent enuresis was stopped. Teachers noted that the children were no longer listless and dull at their work, and a number of backward children were able, when taking iodine, to cope with the work of the standard proper to their age. The best method of administration and the optimum dose of iodine were found to vary. Some children did very well on one iodised sweet or chocolate per week—gr. 1/10 to 1/5 of iodine. On the whole, sweets appeared to give the best and quickest results.

Dr. Fraser is an enthusiast, and research workers may look somewhat askance at his "some hundreds of cases," without recorded controls, and at his rather undiscriminating choice of references to the value of iodine in disorders of all kinds. He is convinced, however, that iodine starvation is the unrecognised cause of much unnecessary ill-health and lack of physical and mental tone, and he regards it as deplorable that iodine-therapy should be associated only with the treatment of goitre, which is, he says, "a side issue, but has become a red herring on the trail of the much greater question—the treatment of iodine starvation cases, irrespective of whether they have goitres or not." Some years ago Hertoghe and Levi [2] described the condition of minor thyroid insufficiency as hypothermia, comprising coldness of the hands and feet, general chilliness, liability to muscular and joint pains, associated with loss of hair, poor appetite, fatigue, and liability to headaches. So common is this picture that it is safe to say that but a small percentage of sufferers have iodine prescribed for them. Dr. S. Barwise, late medical officer of health for Derbyshire, estimated that 10 per cent. of the population of his county were suffering from partial iodine starvation. On the other hand, Dr. W. M. Ash's experience in the same county led him to recommend caution in administration of the drug,[3] and there is good reason to deprecate its wholesale recommendation to the public. It may be hoped that the numerous investigations now being carried out in various parts of the world will lead to a clearer view of the truth. In the meantime Dr. Fraser's thesis calls for the Scot's verdict, "Not proven."

[1] Reprinted from the Annual Report of the School Medical Officer for Cumberland, 1925.
[2] Practitioner, February, 1915.
[3] THE LANCET, 1926, ii., 1022

HEALTH PROPAGANDA.

THE propagandist in public health often finds it difficult to make clear to lay understanding the objects of research, while it is important that interest should be so aroused that the community will be eager to take advantage of the findings of science. The holding of conferences at which experts, medical and lay, can compare experiences before disseminating their conclusions has been advocated in America, and we have received the Quarterly Bulletin (April, 1927) of the New York Health Demonstrations (Milbank Memorial Fund, 49, Wall-street, New York) which describes in brief such a conference. The movement was sponsored by the United States Public Health Service, the New York State Department of Health, the State Medical Society, the State Charities Aid Association, the New York City Department of Health, the New York Tuberculosis and Health Association, and other bodies with cognate aims, and the main theme of the discussions was the prevention of tuberculosis. Dr. Allen K. Krause, Director of the Kenneth Dows Foundation for Tuberculosis Research at the Johns Hopkins University, referring to the work done in the Cattaraugus County, said it had "taught the shut-in dweller in the remote mountain homestead that consumption need not kill while it had converted the County sanatorium from a domicile of despair into a house of hope, and had helped to stimulate and inspire the country doctor and put at his right hand for service the public health nurse." Dr. Krause supported his words with statistics and with notes made from direct observation and was followed by Dr. Lawrason Brown, Medical Director of the Trudeau Sanatorium, who said that "if all boys and girls during the ages from 10 to 20 could be examined annually, including X ray examination, 90 per cent. of the tuberculosis of early adult life could be prevented." Methods for safeguarding the health of mothers and babies and for providing a public health nursing service for rural areas were among the subjects discussed at the conference, while the brief account of the activities of the Cattaraugus County Health Camp in Allegany State Park, N.Y., suggests many possibilities of conserving child life by means of summer camps conducted on approved hygienic lines. This is certainly a wise way of promoting health propaganda.

THE DELFT YEAST WORKS.

WE have received from the Nederlandsche Gist- en Spiritusfabriek an illustrated booklet describing in a popular manner the manufacture of baker's yeast as carried out by this well-known firm at Delft, in Holland. The town has a natural right to the industry as it was a citizen of Delft, Antonie van Leeuwenhoek, who first described the properties of the yeast plant. The N.G. and S.F. factory was started in 1869 by Mr. J. C. van Marken, who combined great business ability with high social ideals. The works, which are now on a very large scale, are up to date, well designed, and famed for the excellence of their products, which include rectified and methylated spirits, and ether for narcosis. The methods of distributing such an unstable product as yeast require to be very efficient and an interesting section is devoted to this subject. The section on social welfare describes the housing estate, with its attractive domestic architecture, the theatre, the school, and the playing fields provided for the staff, who are, we are assured, "one huge family—not a company." No pains have been spared to make the booklet attractive.

DIGBY CHICK.

To the Editor of THE LANCET.

SIR,—Your report of the House of Commons proceedings on May 4th, reported in THE LANCET of May 14th, and the heading "Herrings treated with Dye," reminds me to ask some reader of THE LANCET who knows to inform me what is a "Digby Chick"? It has the appearance of a dried unopened bloater of a golden yellow colour. Why is it thus called, and who was Digby, and why a Chick? They are sold in London in some high-class fishmongers.

I am, Sir, yours faithfully,

May 12th, 1927. INQUISITIVE.

X Y Z.—The address of the Industrial Health Education Society, to whose activities we have recently devoted some space (THE LANCET, March 5th, p. 501, and 26th, p. 662), is 89, Millbrae-road, Langside, Glasgow; general secretary, Mr. J. Mackenzie.